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ABSTRACT

This monograph presents an examination of patterns which emerge from the interrelationship between development, environment, and health and nutrition in Latin America. First, the authors consider the components of this interrelationship, discussing the inseparability of health problems such as malnutrition, fecally-borne and parasitic diseases, and occupational diseases from environmental factors such as lack of food, poor sanitation, and dangerous living and working conditions. The monograph then shows how these elements are further tied to and, in fact, determined by particular socioeconomic development policies pursued at the national and regional levels. Some of the factors explored in this context are intensive exploitation of the agriculture sector, principally for cash crop export, rapid industrialization, and the growth of particular sociocultural phenomena, such as changing values and consumption patterns. Finally, the response of the formal health sector to the problems mentioned above is described; it is argued that by mirroring many of the economic, technological, and sociocultural concerns which motivate general policy development, policy in the health sector has actually contributed to the inequalities in health among different population groups. (Author/MP)

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THE IMPACT OF SOCIOECONOMIC DEVELOPMENT AND ECOLOGICAL CHANGE ON HEALTH AND NUTRITION IN LATIN AMERICA

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PREFACE

This Monograph is a departure from others in the Series in that, for the first time, neither of the authors is formally associated with Cornell University. As Editor, I welcome this broadening of authorship.

The authors are both at Columbia University. Ms. Georganne Chapin is a graduate student in the Division of Sociomedical Sciences in the School of Public Health, and Dr. Giorgio Solimano is on the faculty both of the Institute of Human Nutrition and the Center for Population and Family Health. Dr. Solimano is a Chilean physician well known for his work in public health nutrition in that country. He left Chile, as soon as he was permitted to do so, after the assassination of President Allende, and has worked in the United States ever since. He continues to be involved in health related research, and other activities, in Latin America and the Caribbean. One of his major research activities is a collaborative study between a consortium consisting of Population Council, Cornell University and Columbia University, and institutions in four countries namely, Indonesia, Thailand, Kenya and Colombia. The Editor and Dr. Solimano are working closely together on this project.

Michael C. Latham
Editor

This is a modified version of a paper presented at a Regional Seminar on the project "Styles of Development and Environment in Latin America," organized by ECLA/UNEP, which took place in Santiago de Chile, 19-23 November, 1979.

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I. INTRODUCTION

The relationship between the environment and human health is so fundamental as to be nearly intuitively understood. At the simplest level, interaction between ecological factors and human innovation in the area of food acquisition or production determines people's ability to stay alive. At a more complex level, the environment affects both the nature and the quality of life, determining the conditions under which people live, work, and socialize. This means that any social, economic, or political policy that alters relationships between individuals and their environment potentially affects human health. Socioeconomic development bears examination in this context.

In the past three decades, socioeconomic development in Latin America has been characterized by broad ecological changes. These include urbanization, industrialization, and population growth and movement from rural to urban areas, and are a result of policies focused primarily on rapid economic development through capital concentration, large-scale production, and the expansion of exports. Many countries have achieved unprecedented rates of economic growth.

This progress has been accompanied by improvements in the health and nutritional status of Latin America's population, as indicated by declining mortality, increased life expectancy, and decreasing morbidity, particularly from those infectious diseases which have been successfully combatted by vaccines and antibiotics. Evidence shows, however, that good health and nutrition still elude large sectors of the population. The failure for development to have effected widespread gains in health and nutrition is clearly related to economic and environmental forces. Despite overall growth, the economic priorities of development have resulted in extreme economic inequalities, both between Latin America and the developed capitalist world and within Latin American countries themselves. The nature of these inequalities can be attributed to the pattern of growth engendered by the expansion of transnational capitalism, its creation of a new sociocultural system, and its impact on the distribution of resources (Sunkel and Fuenzalida, in press). In many cases, the same policies and exigencies inherent in particular styles or patterns of development are the causes of the most prevalent health problems in Latin American countries -- malnutrition and infectious disease.

These facts make policy-makers pause to think. Some of the most widely accepted indicators of a country's level of development are health-related. Life expectancy and general and infant mortality are commonly presented as measures of socioeconomic progress. Some of the elements reflected in these statistics which make them useful include: 1) the nutritional status of the population reported upon (and, in case of infant mortality, also that of the mother); 2) the presence or absence of infectious disease; and 3) probable access to preventive and curative health services.

Mortality, however, is not a sufficient measure of health, nutrition, disease, or access to services; therefore, falling mortality rates alone should not be accepted as indicators of economic or physical wellbeing. First, as with all statistics, methods for collection and, subsequently, accuracy vary immensely. Problems which inhibit good data collection, such as poor reporting, geographical isolation, lack of trained personnel, and lack of adequate finances, are especially prominent in less developed countries. Second, although these figures can tell us about numbers of people who are too old or sick to continue living, they do not indicate the conditions, physical and environmental, under which others continue to survive. Third, and most important, such figures are simply statistical averages which, unless disaggregated, do not differentiate among economic and geographic subgroups.

Morbidity statistics (the prevalence or incidence of a disease within a particular population) suffer from the same limitations. These too are averages, disguising any intrapopulation trends or inequalities. Furthermore, though morbidity can document the presence of a particular disease, it cannot assure us that anyone not suffering from such a pathological condition is, indeed, "healthy."

If "health indicators," then, are to be used as measures of socio-economic development, the concept of health must be broad enough to 1) meaningfully define the conditions under which people may be considered healthy, and 2) include all sectors of the population supposed to benefit by development.

The World Health Organization (WHO), in a preamble to its 1946 Constitution, addresses both of these issues, declaring health to be "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity," as well as "a fundamental right of every human being " (WHO Basic Documents, 1976). This conceptualization of health re-emphasizes its environmental nature. In other words, health is viewed as a variable in the development process, a sum of the interactions between social and natural processes, and a global concern (Sunkel, 1978). Significantly, in the latest ten-year plan formulated in 1972 by the Pan American Health Organization and the Health Ministers of the region, special attention was given to ecological considerations in relation to serious health problems in the Americas. Particularly stressed was the link between human health and patterns of socioeconomic development which have environmental impacts. Pointing out the already apparent trends toward contamination and misuse of natural resources, and the problems which result from malnutrition, poor sanitation, unhealthy living and working conditions, ignorance and low income, the Ministers emphasized the need for careful planning in all sectors of the economy. Recognizing the tendency for "development" to become an end in itself, they stressed that economic decisions should be made with man's well-being in mind, and recommended that health and environmental considerations be integrated into other aspects of development (Organización Panamericana de la Salud, 1973).

This integration has taken place on some levels ir a number of countries, as we will point out. However, even in countries with relatively "progressive" social legislation and health programs, economic and environmental inequalities have grown between socioeconomic groups, resulting in stagnant or worsening health and nutritional status among the lowest groups. Fundamental changes in social and economic relations, prerequisites to good health, as defined above, have yet to occur in most of Latin America.

This monograph will be devoted to an examination of patterns which emerge from the interrelationship between development, environment, and health and nutrition. We will consider the components of this interrelationship, discussing the inseparability of human health problems -- such as malnutrition, fecally-borne, air-borne and parasitic diseases, and occupational diseases -- from environmental factors such as lack of food, poor sanitation, and dangerous living and working environments. We will also show how these elements are further tied to and, in fact, determined by particular socioeconomic development policies pursued at the national and regional level. Some of the areas that will be explored in this context are: 1) intensive exploitation of the agricultural sector, principally for cash crop export; 2) rapid industrialization; and 3) the growth of particular sociocultural phenomena such as changing values and consumption patterns.

Finally, we will consider the response of the formal health sector to the problems described in the preceding sections. It will be seen that many of the same elements of development style that foster poor environment and poor health have operated to limit the efficacy of this sector's response to the health problems in Latin American countries. In other words, by mirroring many of the economic, technological and sociocultural concerns which motivate general development policy, policy in the health sector has actually contributed to the inequalities in health among different population groups. We also hope to show that if, as Alan Berg (1973) has said, "the quality of human life is the ultimate measure of development," it is not sufficient to institute progressive changes in the health sector only; rather, health considerations must be allowed to modify policies outside that sector.

II. DEVELOPMENT, HEALTH AND ENVIRONMENT

Health Indicators

Despite significant technological progress throughout Latin America in the past three decades, disease and mortality patterns and rapidly increasing population (see Table 1) continue to reflect the region's status as underdeveloped. Infant mortality rates, a widely used (though problematic) indicator of socioeconomic and environmental conditions, still grossly exceed comparable data for the U.S. and Europe. Life expectancy, another significant measure of the health status of a population, is similarly shorter in Latin America than in the developed countries (see Table 2).

There is a general parallel trend between a nation's per capita gross national product and the average health status of its general population. This relationship is shown in Table 3, which indicates improvement in overall health indicators as GNP rises for countries throughout the Americas. Nonetheless, these figures need to be examined more closely. Lowered mortality (or rising life expectancy) data can be effected by a number of factors. First, independently of health, nutritional and environmental variables, they can indicate changes in data reporting or collection procedures; for example, the initiation of a fee for registering a death could artificially lower mortality rates. Second, they can be influenced by improving conditions among all sectors of the population. Finally, they might reflect better conditions among some groups, despite stable or worsening conditions among others.

The first situation -- changes in data collection and reporting -- has occurred in various countries at different times, but its overall impact is difficult to assess and is beyond the scope of this paper. It would be nice to believe that the second situation -- health improvements among all sectors of the population -- were indeed the cause of improved health indicators; in some areas, across-the-board improvements certainly have been achieved. However, the unequal distribution of the fruits of progress noted throughout the region indicates that the third situation -- better conditions among some groups and stable or worsening conditions among others -- must be considered in relation to socioeconomic development.

The most widely recognized inequalities in health and mortality status between population groups in Latin America and other developing countries are those between urban and rural dwellers, with the latter experiencing significantly worse health and mortality risks. One explanation commonly offered for these differences is the relative lack of access to health services in rural areas (IDB News, July 1979). As Hugo Behm has pointed out, however, place of residence alone does not explain geographical differences in mortality, except in special cases. (Behm and Vallin, 1980) Data that have been further disaggregated indicate that urban versus rural residence is far less a factor in health status inequalities than are socioeconomic factors related to development policies of individual countries and the region as a whole.

Data presented by Behm (1979) for urban areas in 14 Central and South American countries and by Carvalho and Wood (1978) for Brazil demonstrate that very little of the urban/rural differential in mortality remains when differences in social class (particularly family income and education) are controlled. The Brazilian data, which include the correlation between real income and infant mortality in Sao Paulo and Belo Horizonte from 1969 to 1974, are especially striking. It is no secret that Brazil's economic miracle, begun in the 1960's, has been accomplished at the cost of great sacrifice on the part of a majority of the Brazilian people. Through a series of development policies designed to control inflation and stimulate economic growth, the real minimum wage was deliberately reduced. In the meantime the concentration of total national income increased from 27.3 to 36.2 percent among the richest 5 percent of the population, while the

TABLE 1

Population of Latin America, 1977, and Vital Rates, 1976, by Subregion

Subregion	Estimated population July 1, 1977 (thousands)	1976			Urban population, annual growth 1970-1980
		Births per 1,000 population	Deaths per 1,000 population	Rate of growth (percent)	
LATIN AMERICA	341,599	34-37	9	2.4-2.7	3.8
Caribbean	28,615	29	9	1.9-2.0	3.3
Middle America	84,269	38-43	8	2.9-3.3	4.4
Temperate South America	39,557	22-23	9	1.3	2.2
Tropical South America	189,158	36-39	10	2.5-2.8	4.2

Source: World Population 1977. U.S. Department of Commerce, Bureau of the Census, p. 231.

TABLE 2

Life Expectancy at Birth; Infant Mortality Rate and Percentage of Deaths under 5 years of age in the Americas

	Life expectancy at birth[1]				Infant Mortality[2]			
	1960 1965	1970 1975	1975 1980	Projected years gained 1970-1980	1960	1970	1975	Percentage of deaths under 5 years of age[2]
Northern America					26.2	19.9	15.8	3.2
Middle America					70.4	62.4	48.3	34.7
South America					84.9	64.9	49.4	23.3
Argentina	66.0	68.2	69.4	+1.7	62.4	58.8	59.0	17.2
Barbados	66.0	69.1	70.5	+2.6	60.3	45.9	29.0	6.5
Bolivia	43.8	46.8	48.3	+4.0			175.0 (3)	---
Brazil	57.9	61.4	63.6	+4.3	70.0	(1977)	90-100	---
Canada	71.4	72.4	72.5	+0.3	27.3	18.8	13.7	3.6
Chile	57.7	62.6	64.4	+3.5	120.3	79.3	55.4	22.1
Colombia	56.6	60.9	63.4	+4.9	99.8	70.4	56.0	33.0
Costa Rica	62.8	68.2	70.2	+3.6	68.6	61.5	37.1	27.5
Cuba	60.0	----	70.0		35.4	37.5	27.3	10.0
Dominican Republic	53.0	57.8	60.2	+4.8	100.6	50.1	43.6	39.4
Ecuador	54.2	59.6	62.1	+4.7	100.0	76.6	70.0	48.0
El Salvador	51.5	57.8	60.7	+5.5	76.3	66.6	58.3	38.6
Guatemala	47.2	52.9	55.7	+5.6	91.9	87.1	80.7	50.0
Guyana	62.4	67.9	69.1	+3.3	61.4	----	38.0 (3)	----
Haiti	45.5	50.0	52.2	+4.5	200.0	----	150.0	----
Honduras	45.1	53.5	56.2	+5.4	52.0	32.2	33.7	41.0
Jamaica	65.8	69.5	70.6	+2.0	51.5	32.2	23.2	19.5
Mexico	59.5	63.2	65.5	+3.8	74.2	68.5	49.7	36.8
Nicaragua	47.9	52.9	55.2	+4.7	70.2	----	46.0	37.4
Panama	62.9	66.5	67.9	+2.6	56.9	40.5	30.3	29.1
Paraguay	57.0	61.9	63.6	+3.2	90.7	93.8	84.9	30.8
Peru	51.0	55.7	58.1	+5.0	92.1	65.1	65.0	47.1
Trinidad & Tobago	65.8	69.5	70.8	+2.3	45.4	34.4	32.8	12.4
United States	70.0	71.3	71.6	+0.6	26.0	20.0	16.1	3.1
Uruguay	68.3	69.8	70.2	+0.9	47.4	42.6	48.6	10.4
Venezuela	60.2	64.7	66.4	+3.3	52.9	49.2	43.7	34.0

(1) Estimates and Projection of Life Expectancy at Birth by Countries of the Americas. Source: World Population Prospects as Assessed in 1973. United Nations.

(2) Rates per 1,000 live births by country.
Sources: Health Conditions in the Americas 1973-1976. PAHO Scientific Publication #364. Washington, D.C.: PAHO/WHO, 1978.
World Development Report, 1978. Washington, D.C.: World Bank, August 1978.

(3) Economic and Social Progress in Latin America, 1977 Report. Washington, D.C.: Inter-American Development Bank, (1978).

TABLE 3

GNP per Capita; Selected Mortality Rates and Percent of Population served by Piped Water and Sewerage in the Americas

	GNP per capita US$ 1976 (1)	Infant mortality 1975 (3)	Rate and % of deaths from diarrheal diseases in children under 5 yrs, of age 1975 (3)		% of population in urban areas 1975 (1)	% of population(3) served by: Piped Water Supply		Sewerage	
			Rate(4)	%		Urban	Rural	Urban	Rural
Northern America		15.8	5.0	1.4					
Middle America		48.3	399.8	24.7		78	30	40	3
South America		49.4	290.3	19.1		79	36	44	2
Haiti	200	150.0	---	----	21	37	1	--	-
Bolivia	390	175.0(2)	---	----	37	72	13	42	6
Honduras	390	33.7	397.8	25.8	28	99	14	48	<1
El Salvador	490	58.3	448.4	25.6	40	82	37	36	<1
Colombia	630	56.0	251.4	20.3	62	86	33	65	6
Guatemala	630	80.7	979.1	26.0	35	86	14	31	-
Ecuador	640	70.0	552.1	22.0	42	82	13	63	11
Paraguay	640	84.9	---	----	37	32	0	15	2
Nicaragua	750	46.0	497.4	39.7	48	100	43	31	-
Dominican Republic	780	43.6	233.1	18.3	44	88	29	27	17
Peru	800	65.0	394.9	21.1	57	72	10	50	<1
Cuba	860	27.3	44.0	8.1	62	91	6	46	6
Costa Rica	1040	37.1	174.1	18.2	40	100	63	42	4
Chile	1050	55.4	160.6	12.2	83	92	30	67	9
Jamaica	1070	23.2	---	----	45	100	74	21	1
Mexico	1090	49.7	352.5	24.2	63	73	32	41	<1
Brazil	1140	90-100(2)	---	----	60	75	46	34	-
Panama	1310	30.3	120.0	11.9	51	100	63	97	78
Uruguay	1390	48.6	94.9	8.2	81	89	13	58	3
Argentina	1550	59.0	---	----	80	78	30	40	-
Trinidad & Tobago	2240	32.8	198.6	30.4	25	87	90	69	6
Venezuela	2570	43.7	195.5	15.3	82	94	47	52	7
Canada	7510	13.7	4.5	1.4	78	--	--		
United States	7890	16.1	5.0	1.3	76	--	--		

Sources: (1) World Development Report, 1978, Washington, D.C.: The World Bank, August 1978.

(2) Economic and Social Progress in Latin America, 1977 Report. Washington, D.C.: Inter-American Development Bank, (1978).

(3) Rates per 1,000 live births by country. Health Conditions in the Americas 1973-1976. PAHO Scientific Publication #364. Washington, D.C.: PAHO/WHO, 1978.

(4) Rates per 100,000 population.

(5) 1977 or most recent year available.

share among the poorest 40 percent dropped from 11.2 to 9.1 percent (Duarte, 1971). The purchasing power of working- and lower-class Brazilians, then, dropped drastically. It should be no surprise that infant mortality rates, especially sensitive to changes in real income, rose sharply during the same decade in geographical areas with high concentrations of poor populations.

Significant child mortality differences are also visible when data are disaggregated by mothers' educational level. This is demonstrated for recent years by the data presented in Table 4. For the eleven countries included, not only are urban and rural rates (within country) similar when mothers' education is equal, but children of mothers with relatively high educational levels have greater chances for surviving up to their second birthdays than do children of women with less education.

At least two authors have proposed extensions of the correlation between health indicators and socioeconomic level, as judged by education and income, to an analysis of a group's structural position within a given society. Laurell and her colleagues (1976), working in two rural Mexican villages, found that morbidity (i.e., episodes of reported illness) varied according to people's position in production and their village's level of participation in the market economy. The living and working conditions created by the proletarianization of the "developed" village were said to result in greater morbidity among the village's population than among the primarily subsistence agriculturalists of the "less developed" village. Behm (1979) cites data from both Costa Rica and Chile which similarly indicate that a social class's relationship to or control over the means of production is a meaningful variable in mortality and thus, morbidity and health. Analyses of this sort comprise a number of variables, including average income. As we have seen, however, more important than per capita growth is the distribution of resources within a society.

This is particularly clear in the case of Cuba. Though having one of the lowest levels of per capita income in Latin America (Eckholm, 1977), Cuba's mortality trends more closely approximate those of the developed world than do those of any other Central or South American country (Ministerio de Salud Pública de Cuba, 1978).

As stated by Capote (1979), "there is no Cuban miracle in health; improvements are the result of changes in the ownership of the means of production." The integrated health system emerged in 1968 as a consequence of socioeconomic transformation, which has led to progressive disappearance of private medicine and "mutualismo," a form of private insurance. Increased mass participation, changes in health planning, and evaluation techniques for health programs developed since 1970, have led to further improvements in the health situation of the country as a whole and in the geographical regions in which the situation was originally less favorable. The development of integrated health programs by age groups, replacing the programs for specific illnesses, has also represented a step forward. In order to successfully implement this approach, however, increased and improved community participation, including access to the political decision-making process, is required (Escalona and Agüero, 1979).

TABLE 4

Child Survivorship in Selected Latin American Countries. Number of Children Alive at Exact Age 2 of Every 1,000 Live Births according to Mother's Level of Education

		Mother's educational attainment (years of instruction)				
		None	1-3	4-6	7-9	10 or more
Bolivia, 1975	Total	755	791	824	890 a/	
	Urban	788	795	834	900 a/	
	Rural	745	792	819	856 a/	
Chile, 1970	Total	869	892	908	934	954
	Urban	875	896	911	935	953
	Rural	864	887	895	921	- b/
Colombia, 1973	Total	874	905	937 c/	958 d/	968 e/
	Urban	878	914	943 c/	958 d/	970 e/
	Rural	871	896	915 c/	954 d/	935 e/
Costa Rica, 1973	Total	875	907	930	949	967
	Urban	908	917	942	946	968
	Rural	873	904	921	960	963
Ecuador, 1974	Total	824	866	899	939	954
	Urban	827	875	911	942	956
	Rural	824	862	887	925	939
El Salvador, 1971	Total	842	858	889	942	970
	Urban f/	816	864	902	963 a/	
	Rural g/	844	856	882	940	
Guatemala, 1973	Total	831	875	915	942	974
	Urban	837	887	923	940	975
	Rural	830	868	895	961 a/	
Nicaragua, 1971	Total	832	858	885	927	952
	Urban	815	855	886	931	950
	Rural	837	862	880	- b/	- b/
Paraguay, 1972	Total	896	920	939	955	973
	Urban	894	911	942	955	976
	Rural	897	922	938	959	- b/
Peru, 1972	Total		793 h/	864 i/	898 k/	923 m/
	Urban		824 h/	873 i/	901 k/	924 m/
	Rural		777 h/	844 i/	880 k/	903 m/
Dominican Republic, 1975	Total	837	869	892	917	945
	Urban	829	865	896	918	951
	Rural	841	870	888	917	- b/

TABLE 4 - Cont'd.

a/ Seven or more years of instruction.

b/ Not calculated because the women in the group had fewer than 100 children.

c/ 4-5 years of instruction.

d/ 6-8 years of instruction.

e/ 9-11 years of instruction

f/ Urban San Salvador

g/ Remainder of El Salvador

h/ Less than 3 years of instruction.

i/ Did not complete primary education.

k/ Primary level completed.

m/ Secondary education not completed.

Sources: United Nations Population Commission, Report of Monitoring of Population Trends. E/CN, 9/XX/CRP.1, January 1979, pp. 234-5. Compiled from Hugo Behm, et al., La Mortalidad en los primeros años de vida en países de la América Latina (San José, Costa Rica, CELADE, various dates). Individual volumes for each country.

Nutrition, Poverty and Illness

Among the most fundamental components of health is proper nutrition. An adequate diet is the basis of human growth and development. Conversely, insufficient or inappropriate nutritional intake can contribute to a myriad of health problems and inhibit the pursuit of normal, healthy life functions. The availability and distribution of food, then, is an essential variable which links health (in the broadest sense), nutrition, and economic productivity to the process of socioeconomic development. As could be expected from the inequalities among social class/income groups already demonstrated in the areas of mortality and morbidity, there exist great differences in food consumption patterns among different sectors of the populations of Latin American countries. And just as national morbidity and mortality figures are deceptive in that they cover up inequalities within the total population, per capita food availability and intake data mask growing inequalities in the consumption of nutrients and the epidemiology of malnutrition among different population groups.

It has been estimated that in recent years (1972-74), 15 percent of Latin America's population were consuming food below the critical minimum level calculated for their region. While this appears to indicate an improvement over the 16 percent figure estimated for 1969-71, because of population increase, the actual numbers of undernourished Latin Americans rose from 44 to 46 million (United Nations Population Commission, 1979). Even without disaggregated figures, an analysis of available per capita data, as presented in Table 5, serves to forewarn us of the potential magnitude of undernutrition. The implication of figures for individual countries with the shortest supplies are frightening. For example, in Bolivia and El Salvador (countries which rank among the lowest in Latin America in health indicators of all kinds), supplies do not meet requirements even on a per capita basis, meaning that a large number of these countries' residents are severely underfed.

However, even in countries possessing sufficient resources to meet their nutritional requirements, malnutrition will clearly be present unless policies exist to ensure equitable distribution of food. In the free market economies characteristic of most Latin American countries, individuals or population groups with financial means to do so will consume more than their "share" of calories. In addition, calories will be lost due to spoilage or waste. This means that, if exactly 100 percent of the per capita requirements is available, some individuals will necessarily consume less (i.e., be undernourished).

Data available on the actual consumption of nutrients among different socioeconomic strata confirm that differences in consumption are directly related to income and social class characteristics of population sectors. These differences are both qualitative and quantitative. In Mexico around 1970, for example, the population of the capital city, comprising only 15 percent of the national population, but of a substantially higher income level than the rest of the country, consumed between 22 and 58 percent of national food supplies, depending upon the type of food in question. This

TABLE 5

Per capita daily calorie and protein supplies for selected Latin American countries and Latin America as a whole, compared with United States of America
(Includes production and imports)

	CALORIES					PROTEIN GRAMS				
	Supply a		Requirement	Supply as % of requirement a		Supply a		Requirement b	Supply as % of Requirement	
	1961-63	1972-74		1961-63	1972-74	1961-63	1972-74		1961-63	1972-74
Argentina	3238	3281	2350[a]	122	124	108.6	102.0[a]	54	201	189
Bolivia	1631	1869	2390[a]	68	78	44.9	48.5	"	83	90
Brazil	2382	2538	2390[a]	100	106	61.7	63.4	"	114	117
Chile	2552	2736	2440[a]	105	112	66.2	73.9	"	123	137
El Salvador	1808	1885	2290[a]	81	91	46.0	47.4	"	85	88
Mexico	2537	2693	2330[a]	109	116	62.7	65.6	"	116	121
Panama	2317	2332	2310[a]	100	101	57.3	57.4	"	106	106
Latin America	2400	2540	2390	101	107	64	65	"	119	120
U.S.	3320	3530	2635	126	134	101	104	"	187	193

Source: (a) U.N. Population Commission, Report of Monitoring of Population Trends. E/CN.9/XX/CRP.1, January 1979, pp. 442, 461-64.

(b) Food and Nutrition Board: Recommended Dietary Allowances, ed. 8. Washington, D.C.: National Academy of Sciences/National Research Council, 1974.

figure included seven times more poultry, three times more eggs, fish and other seafood, and twice the amount of milk and beef consumed by the other 85 percent of the population (Ramirez Hernandez, Arroyo, and Chavez, 1976).

In Jamaica, it has been estimated that the 70 percent of the population considered to be in the low income sector falls short in its consumption of dietary energy (caloric) requirements by about 27 percent, and in its consumption of dietary protein by about 14 percent. In addition, the most important sources of energy (including wheat, rice and salt fish) for this group are imported, thus placing poor Jamaicans at the mercy of a fluctuating international market (Jamaica, 1974). Data from another Caribbean country, the Dominican Republic, show similar correlations between low income and extremely low consumption of nutrients, with the lowest 75 percent of the population (in terms of income) consuming less than the generally recognized dietary requirements of 2,400 calories and 54 grams of protein per day (Machicado, 1980).

Similar types of data exist for Brazil and for Chile. In the former, income level and education have been shown to be inversely proportional to protein-calorie consumption in an urban population ((Alves, 1977). In Chile, the nutritional consequences of inflation in the national economy, sharply declining purchasing power, and lower nutritional levels among the lower income strata have been demonstrated through as recently as the mid-1970's (Ruiz, 1980; and Hakim & Solimano, 1978). These examples serve to document the strikingly varied levels of nutritional intake among different socioeconomic groups. However, even within strata, certain individuals are far more vulnerable to permanent negative consequences of low nutrient intake than are others.

Malnutrition, i.e., the effects of undernutrition on the body, is disproportionately concentrated among young children. According to the Pan American Health Organization, in most Latin American countries, from 10 to 30 percent of all children suffer chronically from at least moderate malnutrition. Not surprisingly, nutritional deficiencies are most common and severe in areas where poverty and its environmental features are the worst (PAHO, 1975). It has been estimated that of all babies born today in South America, fully 20 percent weigh under 2,500 grams, and could thus be considered underweight, due primarily to nutritional factors (United Nations Population Commission, 1979). The immediate effects of malnutrition on young children are devastating. A study conducted from 1968 through 1970 found that although nutritional deficiencies or infant immaturity (a category which includes premature and underweight births) were the primary causes of only 6 percent of deaths among children under five years of age, these conditions were associated with up to 57 percent of all childhood deaths (Puffer and Serrano, 1973).

This is largely due to the synergistic relationship between nutrition and infectious disease. It has been widely proven that dietary deficiencies reduce the body's ability to fight infection (Scrimshaw, Taylor, and Gordon, 1968). One classic example of a childhood disease which demonstrates this is measles. The measles virus is the same in Latin America as in the

United States. Nonetheless, around 1970, the fatality rate from the virus was 180 times higher in Mexico than in the United States; in Guatemala the disease caused 268 times, and in Ecuador 480 times more deaths than in the United States. These extreme differences in mortality can be attributed to environmental factors, including the nutritional status of infected individuals (Morley, 1973). Other common infectious diseases which have far more serious consequences in malnourished children than in those who are well-nourished are whooping cough, upper respiratory infections, and diarrhea.

The synergistic relationship to which we have referred indicates, though, that malnutrition is a consequence as well as a cause of infectious disease. The mechanisms by which infection can affect nutritional status include the body's loss of nitrogen and depletion of protein, anorexia (loss of appetite and reduced food intake) in individuals suffering from infection, and intestinal parasites and resultant iron and vitamin deficiencies (Latham, 1975). Thus, a cycle of malnutrition and infection is perpetuated (Solimano and Vine, 1980).

Children who survive often suffer from the long-term effects of the malnutrition-infection disease syndrome, typically living at impaired levels of mental and physical development. Behavioral abnormalities and lowered intellectual capacity have been observed in chronically and severely malnourished children (Galler and Solimano, in press). These phenomena are rooted in inseparable social and physiological factors, including truancy and early school-leaving, lack of environmental stimulation, nutritionally-induced apathy and frequent episodes of nutrition-related disease. In addition, the lower productivity of a malnourished individual contributes to his or her already deficient physical and social functioning.

In regard to physical maturation, the long-term effects of malnutrition have been widely documented in many studies. As Alan Berg (1973) has pointed out, while heredity determines the ultimate size an individual can attain, nutrition is the variable that determines how close he will come to his genetic potential. Since the mid-1960's, the World Health Organisation has formally acknowledged that though short physical stature per se is not dangerous, when it is a general feature of a particular population it indicates that malnutrition is present (Proceedings of the Seventh International Congress of Nutrition, 1967). The almost universally observed smaller body size among low income groups, then, is an indication of their inferior nutritional (and therefore health) status as compared to more well-to-do sectors of the population. Hakim and Solimano (1978), using data available for Chile from 1936 through 1965, demonstrate the direct relationship between socioeconomic class/income of a family and the height and weight of its children. They also present more recent data which show the low-percentile ranking of Chilean children on the Iowa weight for age standard, indicating widespread malnutrition in the Chilean population through the late 1960's. Similar findings have been presented for other Latin American countries (Cravioto, DeLicardie, and Birch, 1966).

Retarded physical and intellectual growth are often accompanied by diminished productivity of undernourished or malnourished individuals. This consideration has been evoked by advocates of food distribution programs who maintain that undernourished populations, because of their low productivity, early mortality, etc., usually waste resources, thus "holding back" socioeconomic development (Correa and Cummins, 1970; Reutlinger and Selowsky, 1976). However, if human well-being is an end rather than simply a means to development, then malnutrition should also be recognized for its daily effects on the quality of life of individuals.

Food and Agricultural Policy

Much of Latin America's recent economic growth has been financed through capital acquired from the export of agricultural and industrial products to the United States and other developed countries. Even though for the region as a whole, agriculture's share of the Gross Domestic Product (GDP) has fallen steadily since 1960, in a recent 5-year period (1972-1977) food and agricultural exports nearly doubled in dollar value (Inter-American Development Bank, 1977). It is ironic that Latin American countries are feeding the developed world while large sectors of their own populations go hungry.

The reason behind this apparent paradox becomes clear, however, if we consider the type of socioeconomic development pursued, as reflected in agricultural and food policy. Though local conditions vary greatly, and though (as yet) not all food production is commercial, there are several important features which are common to most Latin American countries. The ones we will focus on here are the intensive commercial exploitation of agricultural land, and the takeover of food production and distribution by agribusiness enterprises, particularly multinational corporations (MNCs). The remarkable feature of agribusiness and the transnational food system is that the poorest populations of underdeveloped countries are made into double victims. First, they are forced away from subsistence farming, some to stand idle (as unemployment rises) and others to produce at very low wages the food or goods to be sold by large profit-making companies or MNCs to those who can pay. Second, they are, at the same time, forced into becoming consumers in this system, as locally-produced basic foodstuffs become increasingly scarce and expensive processed foods begin to take their place in local markets.

Intensive exploitation of agricultural land comprises economic, demographic and ecological features. The focus on cash monocrops for export has led to a concentration of land holdings and increasing mechanization. These trends, while they may serve to lower the landholder's or lessor's costs of production, are neither socially, economically, nor environmentally beneficial for the general population. Both concentration of holdings and agricultural mechanization displace rural small landholders and agricultural workers, releasing them into an already glutted labor market. In a development model based on the experience of the United States and Western Europe, it can be expected that labor released from the agricultural sector will be absorbed by expansion of the industrial and service sector (Inter-American Development Bank, 1977). This has not occurred in Latin America,

however, as reflected in rampant unemployment and persistent poverty both in rural areas and in urban areas to which the unemployed migrate in search of work (International Labor Organization, 1976).

In addition to creating social costs, this agricultural development model is also financially expensive, especially for the small farmer. In traditional agricultural systems, a multitude of crops are grown and lands are rotated on a seasonal or yearly basis, making it difficult for weeds and insect predators to establish themselves. The search for higher yields in monocrop agriculture, however, is marked by particular technological inputs, including the heavy use of fertilizers and reliance on herbicides and pesticides to keep down weed and insect predators.

Only very large growers can afford (or obtain credit for) the initial costs of mechanization and the rising prices of petroleum-based fertilizers and insecticides. Furthermore, with hybrids, farmers lose their self-reliance because these plants are unable to reproduce themselves, meaning that new seed must be purchased every year. Finally, the risks of natural disaster such as blight are greatly increased with standardized commercial production, as opposed to the hedge against crop loss which farmers planting various varieties of the same crop would have. Recognizing these risks, and in an effort to avoid their own losses, agribusiness concerns have begun to rely on contract farming arrangements for the acquisition of crops. Under these arrangements, small farmers can obtain credit to grow (on their own lands) designated crops which they agree to sell to a particular company at harvest. Thus the toll of any natural disaster, or of falling world prices for that matter, is absorbed by the farmer who has invested his own and his family's money, land and labor, and the commercial contractor loses nothing (George, 1978).

Finally, the ecological costs of this system are frightening. As mentioned above, since they have not had time to adapt to their environment and predators, new hybrid varieties require chemical inputs in the form of fertilizers, herbicides, and pesticides. Unfortunately, the amounts of chemicals applied must be constantly increased, as weeds and insect pests develop resistance to them (Commoner, 1972). This practice can lead to disastrous environmental consequences. Heavy concentrations of these chemical substances can and do pollute local soil, water, fish and wildlife. They also may affect the nutritional value of current food crops and restrict use of the land for many years into the future; farmers who have attempted to switch to a new crop have lost entire harvests due to the residual effects of herbicides that had been used as weed killers with the previously grown cultigen (Pillai, et. al., 1978; Penner, 1971; Heathman, 1973).

The health consequences of such heavy use of agricultural chemicals are enormous. Workers who apply the substances, local water supplies, fish, and produce can be directly poisoned by these contaminants. Less directly, but with devastating magnitude, the evolution of pesticide-resistant insect strains can result in serious disease trends (Agarwal, 1979). A most remarkable example of this phenomenon is the recrudescence of malaria in areas where cotton is grown.

Under the malaria eradication program undertaken by WHO in the late 1950's and 1960's, malaria incidence was greatly reduced and the disease was even eradicated in a number of countries. As cotton expanded as a cash crop, however, growers increasingly relied on insecticides -- the same insecticides originally used to combat the malaria-carrying Anopheles mosquito -- to kill cotton pests. As Anopheles became resistant, malaria resurged. Thus, in El Salvador, the incidence of malaria, which decreased by nearly two-thirds in the 1960's and early 1970's, began to rise in 1973, reaching an all-time high in 1976 (WHO, yearly updates). This period coincided with one of soaring cotton production. It has been calculated that this resurgence is occurring at the rate of 105 new cases of malaria for every kilogram of insecticide used (Chapin and Wasserstrom, 1980).

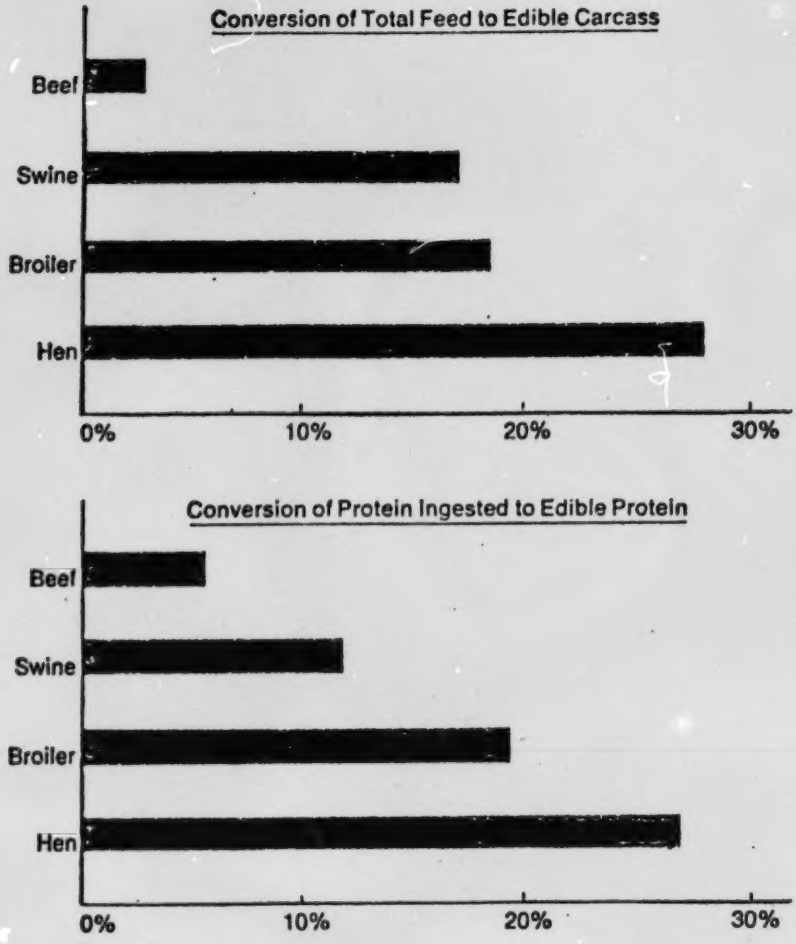
As well as producing environmental and health risks, the agricultural system we are describing is wasteful of land and energy inputs. In capitalist economies, food is a commodity, subject to market factors such as supply and demand. Those who cannot pay for food must either grow it themselves or go without, and those who can pay determine both type and quantity of food produced. In such a system, policy decisions are made without regard to the nutritional needs of local populations. A prime illustration of the misuse of land and energy for commercial profit is the raising of livestock for export. Meat is a very energy-inefficient source of protein and calories, requiring grain inputs which, if consumed directly, could feed from three to twenty times more people, depending upon the type of meat in question. This relationship is shown in Figure 1. Nonetheless, the profitability of meat exports has led to: 1) the increasing conversion of land formerly used for human food crops to use for animal feed, and 2) the conversion of cultivable land to grazing land.

An example of the first case is Colombia, where between 1958 and 1974 the acreage planted with staple pulses (peas, beans, lentils, chickpeas, etc.), which provide 18 to 25 percent high quality protein, decreased to one-seventh its original size. Land area devoted to soybeans and sorghum, on the other hand, increased astronomically -- from zero to 61,000 acres for the former and from 15,000 to over 141,000 acres for the latter. These crops were introduced by Ralston Purina, a multinational company primarily involved in animal food; Purina, then, in order to guarantee a market for its sorghum and soybeans, went into the poultry business in Colombia. There is no reason to believe, however, that rising chicken and egg production have done anything to benefit the Colombian poor; in 1970, one dozen eggs and a small chicken cost more than one week's earnings for the lowest quarter of the population (Ledogar, 1975).

An example of the second case exists in Central America, where the largest latifundia owners are beef ranchers, who raise cattle on land that could as easily (though not as profitably) be used for food crops. Between 1962 and 1972, Central American beef production increased only 5 percent per year, but beef exports increased 18 percent. Considering population growth (roughly 3 percent annually in the same period) (Fox and Huguet, 1977), the obvious result of these production/export policies has been that many people have given up eating meat (George, 1978). This is confirmed by data for Costa Rica, whose per capita beef consumption declined from 49 to 33 pounds

FIGURE 1

Conversion of Ingested Feed to Food



Source: W.L. Wilcke, "General Outlook for Animal Protein in Food Supplies of Developing Areas," in R.F. Gould (ed.), World Protein Resources. Washington, D.C.: American Chemical Society, 1966; also in Paul Araujo, "Nutrition Primer," in Jean Mayer, et al (eds.), Food and Nutrition Policy in a Changing World. New York: Oxford University Press, 1979, p. 278.

per year between 1951 and 1971. In 1975, Costa Rica exported 60 million tons of beef to the U.S., a quantity which would have doubled consumption for that nation's population, had the meat remained in the country (Lappé and Collins, 1977). The ability of commercial food enterprises to prevail even in times of extreme economic crisis was demonstrated in Nicaragua, just prior to the fall of the Somoza regime. During a time when, due to civil war, hundreds of thousands of people were displaced and widespread hunger was reported, beef exports (largely in the hands of the Somoza family) continued. The same planes chartered by the Red Cross to bring in emergency medical supplies were flying back to the United States loaded with Nicaraguan meat for American consumers (The New York Times, July 18, 1979).

Other cases of food policy catering to the tastes of developed countries include the growing of commodity export crops, such as coffee and sugar, which uses land and labor that could otherwise be used to produce food for Latin Americans. Even local marine resources (a cheap source of protein) are converted into luxury items for foreign consumers; 80 to 90 percent of Peru's anchovy catch is exported as fishmeal to feed industrially-raised chickens, and other exported fish products (as well as grain) go into pet food for American dogs and cats (George, 1978).

Without a doubt, the foreign exchange generated through exports is necessary for developing countries. But due to the capitalist nature of food production and the socioeconomic stratification within most Latin American countries, the economic benefits of such earnings never reach those who sacrifice the most to produce them.

What does reach underfed Latin Americans is an ever-growing influx of new foods and products which cost far more and provide far less nutritional value than either the traditional foods they replace or the primary ingredients from which they are made. Thus Brazil grows sugar and oranges for the Coca-Cola company, which is rapidly expanding its market through sales of Coke and Orange Crush to a population the majority of which suffers from Vitamin C deficiency (Ledogar, 1975). In Mexico, the growing preference for white bread from wheat flour over corn tortillas illustrates how changing tastes are related to profits to be gained by the creation of a new market for U.S. wheat growers.

Probably the most widely-publicized case of inappropriate, unhealthy and expensive food being used to replace cheaper and more energy-efficient nutrients is that of artificial infant formula. Experts agree that human breast milk is the best source of nutrients for human infants, except when the mother is severely malnourished (Jelliffe and Jelliffe, 1971). Even in these cases, however, there is nothing to indicate that artificial formula is an appropriate remedy, for the same economic and environmental conditions which produce maternal malnutrition (poverty and infectious disease) make the use of formula impracticable. In order for an artificial formula to adequately and safely nourish an infant, it must be served in the proper concentration after being prepared under the proper conditions. In developing countries, a week's supply of formula for one infant can cost up to

a quarter of total household income for the week; in an effort to cut costs, poor mothers dilute the formula far beyond its recommended concentration, thus reducing the nutrients their babies receive to a fraction of what is necessary for health (Ledogar, 1975). In addition, bottles, rubber nipples, and water must be sterilized and properly stored in order for the milk to be safe; for most Latin America's rural and urban poor, often living at a most marginal level of subsistence with no access to clean water nor sanitary facilities of any kind, it is impossible to meet these requirements. Between contamination, loss of nutrients, and the loss of immunological protection offered by human breast milk, it is not difficult to understand the rise in infant diarrhea, infectious diseases and subsequent mortality that accompanies the "modern" practice of bottle feeding (Margulies, 1977).

Another cost to the poor of artificial formulas, though more difficult to calculate, is that of additional births. By suppressing ovulation, lactation has a contraceptive effect in nursing mothers. This protection, badly needed in poor families, is lost when a mother switches to formula, thus increasing her own health risks and the nutritional risks for all members of the household imposed by the arrival of a new mouth to feed (Wolfers and Scrimshaw, 1975).

The infant formula business in Latin America is in the hands of such multinational giants as Nestles and Bristol-Myers. These companies, dependent for their profits on expanding sales, tailor their marketing and promotion to take advantage of social, demographic, and cultural conditions. The same conditions that worsen the situation of the poorer sector of the population -- reduction of the subsistence base, forced participation in the cash economy, and rural-to-urban migration -- also serve to make this sector into a new market for food products whose most remarkable characteristics are the nutritional and financial strain they place upon their consumers.

The Environment

All countries face the potential conflicts which arise between technological progress and development, on the one hand, and environmental and health concerns, on the other. However, due to their structural position within world politics and economics, countries developing under capitalism probably have greater problems in this regard. This is due to the push for rapid industrialization and capital formation, and the fact that decision-making power is often shared with, if not dominated by, transnational interests.

We have discussed the problems of malnutrition and infectious disease and have shown how the former is exacerbated by particular patterns in agriculture and food distribution. We have also mentioned ecological problems tied to the particular model of development being pursued in Latin American countries. At this point we would like to focus on some general environmental issues related to health and nutrition. We will see that, although an unhealthy environment affects everyone regardless of socioeconomic status, just as in the area of food and agricultural policy, negative environmental impacts tend to be disproportionately harmful to the health of the poor.

A basic requisite for health, second perhaps only to proper nutrition, is the availability of safe water for drinking, washing, and cooking. Nonetheless, in 1977, a substantial proportion of Latin America's population lacked this amenity. Differences between urban and rural areas are striking. In eleven of thirty countries, 80 percent of the urban population had piped water, this meeting the 1980 goal set for the region in the Pan American Health Organization's Ten Year Plan (Pan American Health Organization, 1973). In the same year, ten (not necessarily the same as those for urban areas) of thirty countries for which data are available had met the goal for 1980 of safe water (piped or "easy access") for 50 percent of the rural population (Figure 2). Translated into numbers, these data signify that in 1977, approximately 130 million Latin Americans were without safe water (Pan American Health Organization/World Health Organization, 1978).

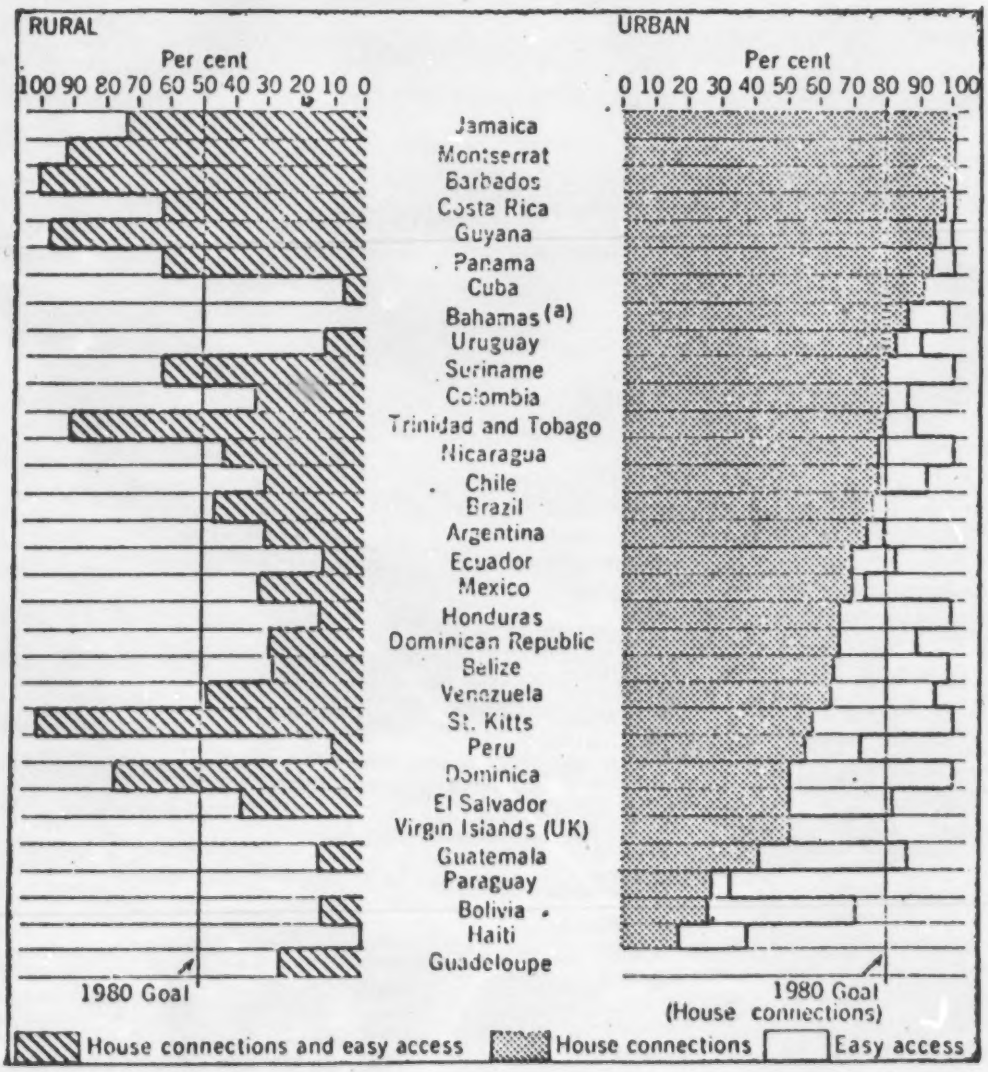
The 1980 goal set for coverage of sewerage systems or other sanitary facilities was 70 percent for urban areas and 50 percent for rural areas. In 1977, of all countries reporting data, only Panama had met these goals. Sewerage services were available to more than 45 percent of urban inhabitants in only ten of twenty-five countries, and to 10 percent or more of rural inhabitants in only three (Figure 3). This means that nearly 240 million people in Central and South Americas had no sewerage systems or sanitary facilities in their homes. Excessively high mortality in this region from fecally-related diseases (Table 3) is not surprising, given these conditions (Puffer and Serrano, 1973). The relationship between sanitation, disease and poverty is clear. Poor people are far more likely to be without safe water and sewerage than are people of the middle and upper income sectors. Furthermore, due to other poverty-related conditions -- malnutrition, lack of access to medical services, etc. -- economically poor people are often locked into a state of poor health.

As already discussed, one of the effects of agricultural development in Latin America has been the displacement of rural laborers which, together with high birth rates, has resulted in extremely rapid growth of urban areas. Health problems related to poor sanitation are worse in areas with high population concentrations. Fecally-borne diseases are easily spread in crowded cities. Given the synergistic relationship between malnutrition and infectious disease, undernourished slum dwellers become easy targets for the poverty-malnutrition-infectious disease cycle.

Other environmental conditions associated with development provoke greater disease risks among poor people than among those who are more affluent. It is commonly known that poor people tend to live in the most polluted areas. These may be crowded urban or rural slums lacking safe water and sewerage, or they could be industrial areas which, because of noise, inaccessibility, and industrial pollution, are undesirable to those who can afford to live elsewhere. Air pollution is a significant risk factor in chronic diseases, especially those of the respiratory tract (Eckholm, 1977). Furthermore, contamination of local waters by industrial and chemical wastes, particularly severe in Latin America because of the absence or laxity of government restrictions on such activities, places the population of such areas at immediate risk of poisoning from toxic substances. In addition, there is growing evidence that poor people

FIGURE NO. 2

Percentage of urban and rural population served by water supply systems, with house connections or easy access, in countries of Latin America, 1977 or most recent year available

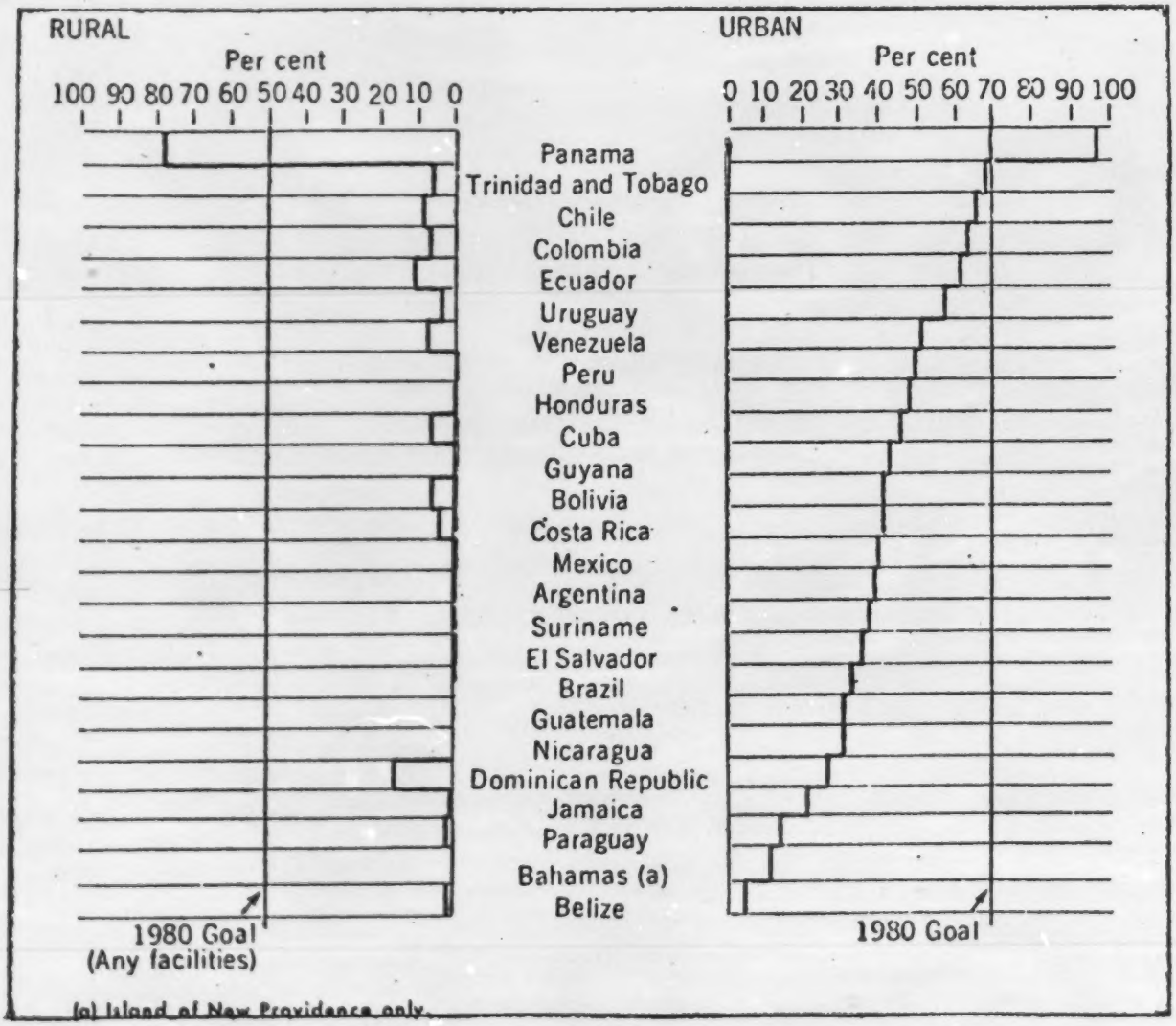


(a) Island of New Providence only.

Source: Health Conditions in the Americas 1973-1976. Scientific Publication #364. Washington, D.C.: Pan American Health Organization, 1978, p. 115.

FIGURE No. 3

Percentage of urban and rural population served by sewerage systems in countries of Latin America, 1977 or most recent year available



Source: Health Conditions in the Americas 1972-1976. Scientific Publication #364. Washington, D.C.: Pan American Health Organization, 1978, p. 116.

are more susceptible to dangers of chemical/industrial contaminants because of their already precarious health and nutritional status.

The problem of toxicity from overuse of agricultural chemicals is particularly dangerous in rural Latin America for two reasons. First, control or regulation over these substances runs from being practically nonexistent to being significantly more lenient than in developed countries. In fact, herbicides and pesticides that have been banned in the United States are regularly sold to developing countries by their multinational manufacturers (Smith, 1979). Second, the effects of pesticide poisoning, especially, seem to be more extreme in individuals with malnutrition (Boyd, 1972), a condition widespread throughout Central and South America. And by poisoning livestock and local food supplies (Smith, 1979), financial and energy inputs are wasted, and nutritional deficiencies worsen among poor populations.

Not all the negative consequences of development fall upon the poor. Some are spread equally among all socioeconomic sectors of the population, and some are even concentrated in the upper sectors. An example of the former is general urban air contamination by industrial and automobile exhausts. Air pollution in large Latin American cities is, as any visitor knows, at least as bad as that in cities of the industrialized, developed world. It may even be worse, due to the lack of control over emissions, and the preponderance of older vehicles (Pan American Center for Sanitary Engineering and Environmental Sciences, 1971).

Certain negative development consequences disproportionately affect the rich. One example of this is what Erik Eckholm (1977) calls the "hazards of the affluent diet." Refined sugars and starches, processed foods (high in salt content and chemical additives), and obesity all contribute to the chronic disease pattern characteristic of developed countries. Some of the ailments linked to higher socioeconomic status are hypertension, coronary artery disease, and various cancers.

Cigarette smoking is another health risk that is more prevalent among the higher socioeconomic strata, but that is increasing among all sectors of the Latin American population. A survey conducted in eight cities in the early 1970's revealed that 18 percent of all women and 45 percent of all men residing in those cities smoked (Joly, 1973). We can reasonably expect, however, that as socioeconomic development progresses, this behavior will spread to the lower classes and to rural areas. Advertising and changing values will overcome economic and sociocultural resistance to cigarettes and we will see a corresponding increase in the rates of lung cancer and other related respiratory diseases.

Another class of environmental problems resultant from the particular political and economic development policies being pursued in Latin America are the health hazards associated with particular occupations or job settings. Just as with most of the general environmental hazards described above, it is the lowest socioeconomic sectors of the population who experience the greatest risks and harmful effects from occupationally-related health problems. The battle for safe working conditions in developed countries has a long political history. Shorter working hours, child labor

laws, regulations requiring employers to provide their workers with protective clothing and safety equipment, etc., have all been won through strong efforts on the part of organized labor and an increasingly aware populace (Wallack, 1972). Even so, occupational hazards still abound in the industrialized world though their character has changed from some of the grossest, most visible risks to less visible ones such as chemical carcinogens, noise pollution, and psychological risks imposed by stressful work environments.

The pressures on industry to reduce the dangers to which their workers are exposed, together with rising labor and production costs in developed countries, have led corporations to search for new places to conduct their business. Third World capitalist countries, anxious for the jobs and capital generated through industrial expansion, have opened their doors to foreign or multinational concerns, providing tax shelters, keeping safety and other restrictions to a minimum, and allowing them to function cheaply and relatively undisturbed (Barnet and Müller, 1973). These policies have often resulted in the achievement of industrial growth at the expense of the health of these countries' populations.

Latin America, because of its geographical proximity and willingness to cooperate, has thus received a good proportion of exported hazardous industry from United States companies or United States-based multinational concerns. These companies acquire workers easily, because of widespread unemployment in most of Central and South America and because they are able to offer better wages and benefits than local industries while still keeping their costs well below those in the home country (International Labour Organization, 1973). The nature of foreign or multinational capital investment, accumulation and profit, and local governments' cooperation with these enterprises, has a direct relationship to the increasing inequalities in income distribution observed within Latin America's population. However, these factors are also responsible for the unsafe conditions under which Latin Americans produce a wide range of industrial and consumer goods. Just as in the case of food and agricultural products, these goods are often expensive, inappropriate and unnecessary for most of the population of the countries in which they are manufactured, and are targeted for the elite consumers of the developed and developing countries (James, 1978).

One of the most well-known cases of the export of a hazardous industry to Latin America is that of asbestos. Since 1918, recognizing the fatal or disabling lung disease suffered by those exposed to asbestos fibers, life insurance companies in Canada and the United States have refused to insure asbestos workers (Elling, 1977). Nonetheless, through the mid-1960's, U.S. workers continued to manufacture asbestos products with only minimal protection in the form of masks, proper ventilation, etc. The United States was at that time one of the largest exporters of finished asbestos products in the world. In 1968, however, as a result of both stricter occupational regulations and the economic incentives provided by foreign countries, the U.S. asbestos industry began to transfer its manufacturing operations south of the border, particularly to Mexico, Brazil and Venezuela.

It is evident that this move will not have positive health consequences for Latin American workers. In Mexico, eyewitness reports tell of hazardous conditions in an asbestos cement plant which in 1977 employed over 1,000 workers at an average salary of (U.S.)$6 per day:

> An industrial engineer was quick to assure us that in general they "provide minimum but safe protection for workers." [However,] the knowledge [that the Mexican Institute of Social Security (IMSS) lists asbestos cement manufacture among the most dangerous industries] has little apparent effect on the plant we visited. Even though some procedures in the plant are less hazardous than others, because no section is blocked off from another the dust has dangerously spread everywhere. It is accumulated in corners and hangs down from the pipes. We saw men sweep up armfuls of raw asbestos, manually packing boxes of fiber to be weighed. None of these workers wore any type of protective clothing. Elsewhere, dust could be seen clinging to their wool caps or powdering their boots. No lockers are provided to store street clothes and since workers go home for lunch, twice a day they are unconsciously contaminating their families as well. (NACLA, 1978).

Similarly dangerous conditions have been observed at other Mexican asbestos plants. Asbestosis, a paralyzing and fatal lung disease found exclusively among people exposed to asbestos fibers, has been recognized for centuries (Elling, 1977). More recently, however, it has become evident that asbestos workers also suffer from other diseases of the respiratory tract. A 1975 book published by the American Public Health Association states that, among retired American asbestos workers, observed deaths from respiratory cancer were 275 percent higher than expected mortality from this disease in the general population. For all cancers, mortality among asbestos workers was nearly 150 percent higher than that of the general population (Chart Book, 1975).

Similar respiratory risks exist for workers in mining, a notoriously unregulated industry. In a report to the Fifth International Conference on Pneumoconioses (sponsored by the International Labour Organization and held in Caracas in November 1978), a Brazilian epidemiologist estimated that as many as 30,000 Brazilians have silicosis as a direct result of Brazil's accelerating economic development (Guidotti, 1979). A 1970 report had outlined similarly grim situations for Colombian and Bolivian miners (Seminario Regional de Silicosis, 1970). It should be mentioned that not only does silicosis itself severely impair respiration, but it also predisposes its victims to tuberculosis. It should also be pointed out that the mineral resources of many Latin American countries are in the hands of multinational or foreign firms. This is another example of wasted natural and human resources -- profits leave the country, and a diseased or debilitated population of workers remains.

Occupational health hazards are not restricted to urban areas or to industrial occupations. As we have already mentioned, agricultural workers are also subjected to dangerous work-related hazards, such as the risk of poisoning from pesticides and other synthetic chemical compounds used in commercial agriculture. In addition to increased use of these compounds, the manufacture of such chemicals is rapidly shifting from the United States to the developing countries. This follows on the discovery that a large group of pesticide compound causes sterility in workers manufacturing them, as well as in laborers who apply them (Congressional Record, 1978). Rural workers are also disproportionately subjected to the occupational risk of tetanus because of their exposure to anaerobic bacteria that live in the earth and in animal fertilizers (World Bank, 1975). The fatality rate from this disease is nearly 100 percent, unless sophisticated medical treatment is administered, and the economic and demographic distribution of health services in Latin America usually preclude rural workers' access to such services.

Other general socioeconomic conditions have an important impact in the area of occupational health problems. Poverty-related conditions place poorer workers at risk in even a relatively "safe" job environment. Bad health and inadequate nutrition, high rates of infection, and crowded, unrestful living conditions can all result in fatigue and physical debilitation. When combined with long working hours, frequently long commutes, and lack of proper on-the-job food and sanitary facilities, these factors can significantly lower a worker's physical and mental reactions and thus contribute to his or her potential for having work-related accidents. Finally, low wages, a characteristic feature of low status, "blue collar" or agricultural occupations, perpetuate the often unhealthful environment in which such workers live, making it unlikely that they will ever be able to break the cycle of poverty and ill health.

Proponents of multinationally- or foreign-generated industrial expansion in Latin America have argued that development-related environmental dangers, though unfortunate, are unavoidable in developing countries. This argument is based, in part, on the belief that Latin America and other developing regions can safely absorb far greater environmental contaminants because of their relatively low current levels of industrial development and low population density, especially in rural areas. For an example of this position, one only need look at the Industrial Development Survey, published by the United Nations in 1974. Some also hold that because of the need for rapid industrialization and capital accumulation, Latin American countries cannot afford the "luxury" of worrying about environmental risks to human health.

The latter argument has been put forth especially to counter concerns about occupational health. Health risks present in the job environment are simply a more narrow aspect of general environmental health problems. It has been said that the need for jobs in Latin America is so great and the financial cost of environmental protection so high, that for local governments to do anything which might reduce profits would only discourage foreign investment, worsen unemployment, and otherwise negatively affect national economies.

These arguments are valid in the short run, if corporate costs and profits are considered of the highest priority. It is indeed conceivable that if companies are pushed too hard to install expensive anti-contamination devices, filters, etc., or to require their workers to wear protective clothing which, in addition to its cost, might somewhat lower productivity, they will take their business elsewhere. On the other hand, if human health is a priority, and if the human and social costs of environmental and occupational hazards are appreciated, developing countries cannot afford to expose their citizens to such risks. As the developed industrialized countries are learning, it is far more difficult to go back and undo the damage brought by poisons in the air and water, poorly managed nuclear wastes, and the heedless depletion of natural resources, than it is to avoid these problems in the first place. It is also impossible to restore human lives lost from these causes, or from accidents which occur to workers while producing profits for others.

We are not saying that technology and industrial development are, in and of themselves, bad. Nor are we suggesting that Latin American countries abandon their attempts to develop in these areas. What we are suggesting, however, is that the current style of development will, if pursued, only perpetuate the social, political, economic and health conditions that have kept Latin America underdeveloped for so long. Regional cooperation is one avenue by which to address the problem of development-related health hazards. Were all Latin American countries to refuse to tolerate exposure of their populations to dangerous environmental and work conditions, multinational corporations would be forced to modify their practices.

III. THE FORMAL HEALTH SECTOR

In the foregoing discussion, we have attempted to show that the prevalence of particular health problems in Latin American countries is due to social and environmental factors which are determined, to an important degree, by styles of development pursued throughout the region. At this point, we will turn to a discussion of the formal health sector, that system which is charged with preventing and remedying the grave health problems which have been outlined above. The purpose of this section is to demonstrate that many of the same demographic, political, economic, and socioecultural mechanisms that contribute to malnutrition, infectious diseases, and occupational and other environmental illnesses determine the types of health services that are available and to whom they are accessible.

During recent decades, favorable changes in the area of health services have been observed in various countries. These have been effected through increased health expenditures, rationalization of services, redistribution of health resources, and better training and utilization of health personnel. These factors, combined with (a) the dissemination of medical technology in the form of vaccines, antibiotics, etc., and (b) the general improvement of socioeconomic conditions in the form of better housing, sanitation, education, etc., have all contributed to falling mortality, rising life expectancy, and the decline of particular infectious

diseases. Serious problems remain, however, and as we have seen, are disproportionately concentrated among the lowest socioeconomic groups who live in the worst environments. Health sector development, technological advance, and economic development are actually by-passing the majority of the population.

This situation is not unique to Latin America. Nor has it gone unrecognized. A report prepared by the Directors of the World Health Organization and UNICEF defines the current problem as follows:

> The gap is widening between the health "haves" in the affluent countries and the health "have-nots" in the developing world. Moreover, this gap is also evident within individual countries, whatever their level of development . . .
>
> Better health could be achieved with the technical knowledge available. Unfortunately, in most countries this knowledge is not being put to the best advantage for the greatest number. Health resources are allocated mainly to sophisticated medical institutions in urban areas. Quite apart from the dubious social premise on which this is based, the concentration of complex and costly technology on limited segments of the population does not even have the advantage of improving health. Indeed, the improvement of health is being equated with the provision of medical care dispensed by growing numbers of specialists, using narrow medical technologies for the benefit of the privileged few . . .
>
> At the same time, disadvantaged groups . . . have no access to any permanent form of health care. These groups probably total four-fifths of the world's population, living mainly in rural areas and urban slums. In some countries, even though health facilities are located within easy reach, inability to pay or cultural taboos put them out of bounds.
>
> To complicate matters, health systems are all too often being devised outside the mainstream of social and economic development. These systems frequently restrict themselves to medical care, although industrialization and deliberate alteration of the environment are creating health problems whose proper control lies far beyond the scope of medical care.
>
> Thus, most conventional health care systems are becoming increasingly complex and costly and have doubtful social relevance. They have been distorted by the dictates of medical technology and by the misguided efforts of a medical industry providing medical consumer goods to society. Even some of the most affluent countries have come to realize the disparity between the high care costs and low health benefits of these systems. Obviously it is out of the question for the developing countries to continue importing them. Other approaches have to be sought. (Primary Health Care, 1978).

Thus, unequal distribution of resources and access to services; reliance on imported values, including high technology and specialization; fragmentation within the health sector, and the isolation of health from other social, economic, and environmental concerns; and the involvement of private enterprise in the area of medical technology, are all defined as problems common to health systems of developing countries. These are the elements around which the remainder of our discussion will revolve. We would like to make clear from the outset our belief that these features are all related to or direct consequences not of socioeconomic development, per se, but of the capitalist development style pursued in most of Latin America.

Distribution of Health Resources and Services

Unfortunately, information available on health services and resources is fragmentary on national and regional levels. Moreover, in dealing with a sector very complex in both structure and organization, it is difficult to determine total resources invested in health, and even more difficult to differentiate the distribution of resources by geographic region or socioeconomic class. Our analysis, therefore, is based on data obtained through international and multilateral agencies, from specific studies available for individual countries, and from our own and our colleagues' experiences in different Latin American countries. We are aware of the wide variation among the health systems of each country. We are also aware of the great priority given to improving health within certain countries, especially in recent years, and of the positive results that such attention has produced. The scope of this paper, however, and considerations of time and space, limit our discussion to problems and features which are now or have until recently been common among most Central and South American countries (and their Caribbean neighbors), and which are tied to their development style and the particular conditions it foments.

Between 1972 and 1976, available data indicate that the ratio of health personnel to the general population of Latin America rose from 20 per 10,000 to 28 per 10,000. Although some of this increase is doubtless due to data collection procedures and to the inclusion of new categories that were omitted in earlier years, it is believed that there has actually been a real increase (Pan American Health Organization, 1978). Figures that indicate changes for individual practitioner groups may be seen in Table 6, which shows the ratios (per 10,000 population) of physicians, nurses, nursing auxiliaries and dentists in North, Central and South America for 1964, 1972 and 1976.

However, an increase in the proportion of physicians or other general health workers does not necessarily mean that quality or quantity of health care is improving. Just as the "trickle down" theory in economics (the idea that if per capita Gross National Product and other economic indicators improve, the benefits of these changes will eventually reach the lowest sectors of the society) has not been borne out in developing capitalist countries, the experience of the United States illustrates the failure of

TABLE 6

Physicians, Nurses, Nursing Auxiliaries and Dentists in the Three Regions of the Americas, 1964-1976. Ratios per 10,000 population

	Physicians			Nurses			Nursing Auxiliaries			Dentists		
	1964	1972	1976	1964	1972	1976	1964	1972	1976	1964	1972	1976
Northern America	15.1	15.5	16.4	30.0	37.8	46.4	34.4	62.9	67.2	5.4	4.9	5.1
Middle America	5.2	6.1	6.9	3.7	3.5	5.4	8.2	6.6	9.0	1.0	1.0	1.1
Southern America	6.0	7.4	8.0	2.6	2.3	2.4	7.2	10.5	10.5	2.8	2.9	3.1

Source: Health Conditions in the Americas, 1973-1976. PAHO Scientific Publication No. 364, 1978.

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a similar theory in the health sector -- particularly in regard to physician ratios. For years, one popular belief has been that one of the problems limiting access to medical care was a shortage of physicians, due primarily to a low number of medical schools and to other exclusionary policies encouraged by the American Medical Association. However, despite a substantial increase in the number of physicians trained in recent years, many people -- particularly the urban poor and those living in small towns and rural areas -- still have trouble seeing a doctor when they are in need.

The reason for this lies in the concentration of practicing physicians in wealthy urban or suburban areas, and in doctors turning to research and highly specialized fields (because of the excitement, prestige and profit offered by these), rather than to general or primary care. Thus, it is necessary to be cautious in equating an increase in health manpower with an increase in quantity or quality of health services. The same caution must be had in analyzing other aspects of formal health services (hospitals, technical innovations, etc.), it being necessary to determine their actual accessibility to different sectors of the population.

In Latin America, probably the most easily documented and most striking inequalities in the distribution of health resources lie in the differential access to health practitioners and services between urban and rural areas. Table 7 and Figure 4 demonstrate the disproportionate concentration of physicians in urban areas for a number of countries in the Americas. Although precise data on the geographic distribution of nurses, nurse auxiliaries, and other health personnel are not available, a similar situation is known to exist for these groups. Table 8 shows that hospital resource distribution is also skewed toward national capitals and large cities in twenty countries presenting data for the mid-1970's.

The urban-rural differential in health resource distribution conforms to inequalities in the socioeconomic distribution and health status profile of national populations. High disease rates attest to poverty and low rates of medical care in rural Latin America. Additional evidence is the widespread lack of medical certification on reported deaths among rural residents. In Panama around 1970, for example, while over 95 percent of deaths taking place in urban areas were medically certified, fewer than 30 percent of deaths occurring in rural areas had medical certification. For the country as a whole, 96 percent of all non-certified deaths took place in rural areas (Woolley, Perry, and Eccles, 1972). It can be assumed that individuals who were not receiving medical attention at the time of their deaths were probably not regularly attended during their lives, either.

With the exception of the poorest urban populations, income, education, and health and nutritional status are lower in rural areas than in cities. Furthermore, again with the exception of urban slums, access to safe water and sanitary facilities is far more limited in rural areas. Therefore, the characteristics of resource distribution within the health sector simply parallel the urban concentration of wealth and capital investment for socioeconomic development.

TABLE 7

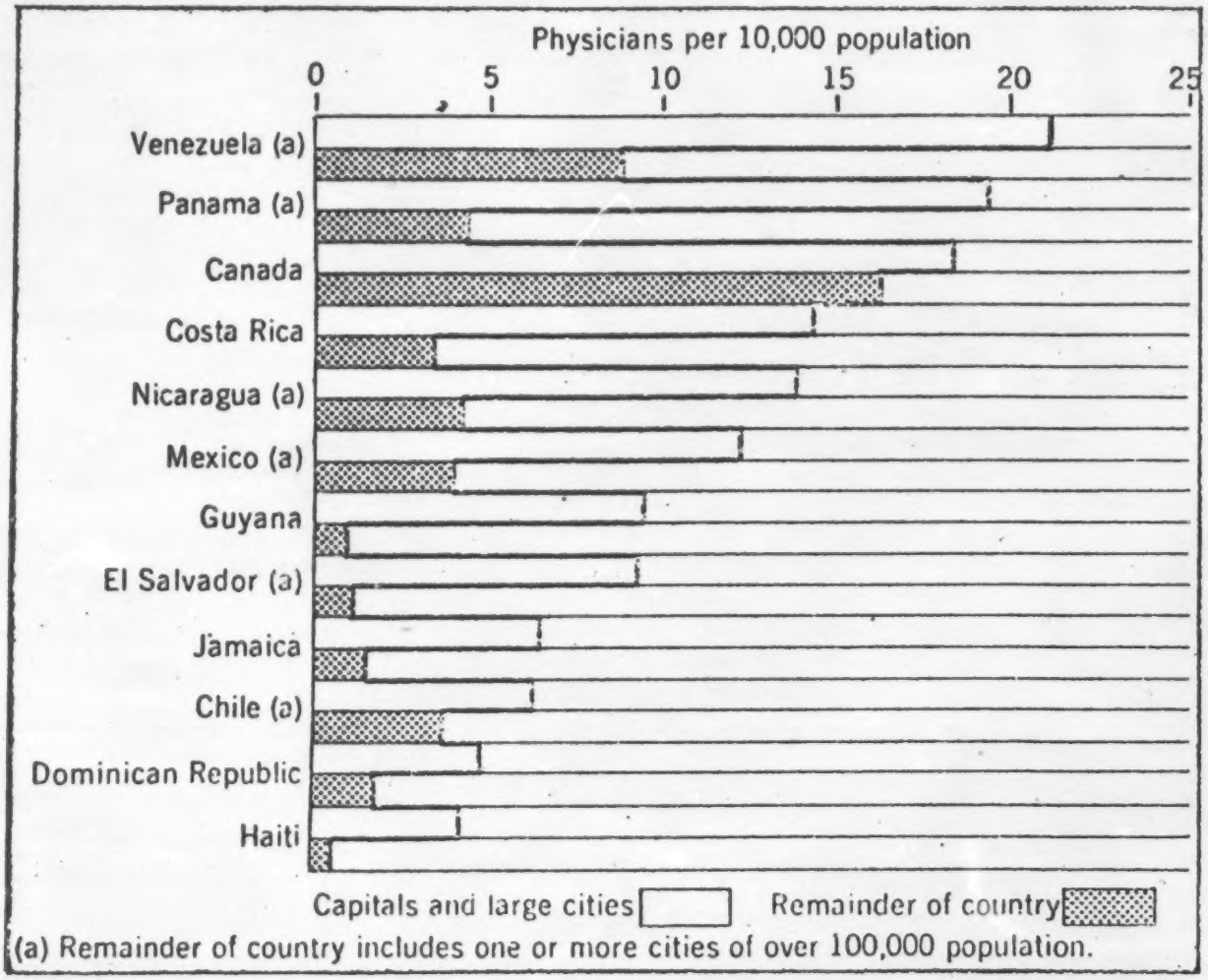
GNP per capita and ratios of Physicians, Nurses and Nursing Auxiliaries per 10,000 population in selected countries of the Americas 1975-1976

	GNP per capita US$, 1976 (1)	% Rural population(1)	Physicians (2)			Nurses (2)	Nursing Auxiliaries (2)
			Total	Capitals and large cities	Rest of the country		
Haiti	200	79	0.9	4.1	0.4	1.1	3.8
Bolivia	390		4.7			1.6	1.7
El Salvador	490	60	2.7	9.2	1.0	2.9	6.1
Colombia	630		4.8			1.4	11.0
Nicaragua	750	52	6.3	13.8	4.1	2.4	9.8
Dominican Republic	780	56	5.4	4.7	1.6	0.7	5.5
Cuba	860		8.9			10.1	14.4
Costa Rica	1040	60	6.6	14.3	3.3	5.6	21.3
Chile	1050	17	4.5	6.1	3.6	2.6	20.6
Jamaica	1070	55	2.8	6.4	1.4	14.8	4.7
Mexico	1090	37	8.0	12.1	3.9	4.6	8.2
Panama	1310	49	7.9	19.3	4.2	6.9	15.1
Venezuela	2570	18	11.5	21.0	8.7	7.4	15.9
Canada	7510	22	17.3	18.2	16.2	61.5	47.4
United States	7890	24	16.3			44.9	69.4

Sources: 1) World Development Report, 1978. Washington, D.C.: The World Bank, August 1978.
2) Health Conditions in the Americas, 1973-1976. Washington, D.C.: Pan American Health Organization, 1978.

FIGURE NO. 4

Physicians per 10,000 Population in Capitals and Large Cities and in the Remainder of the Country, around 1976



Source: Health Conditions in the Americas, 1973-1976. Washington, D.C.: Pan American Health Organization, 1978, p. 126.

TABLE 8

Ratios of Hospital Beds per 1,000 Population, in Capitals and Large Cities of more than 100,000 Population and the Remainder of Country, @ 1976

Country or other political unit	Year	Total	Capital and large cities	Remainder of country
		Ratio	Ratio	Ratio
Argentina	1973	5.4	(a) 9.4	(b) 4.9
Bahamas	1975	4.3	6.9	0.7
Barbados	1976	8.7	(c) 16.7	3.4
Belize	1976	4.5	9.6	2.1
Bolivia	1975	0.9	1.4	0.7
Canada	1975	9.2	19.3	5.3
Chile	1975	3.3	(a) 3.4	(b) 3.2
Colombia	1973	2.0	3.0	1.4
Costa Rica	1974	3.8	21.2	1.6
Cuba	1973	4.2	13.8	2.0
Dominican Republic	1975	1.5	(a) 3.8	(b) 1.1
El Salvador	1976	1.4	7.1	0.8
Haiti	1976	1.0	4.4	0.6
Honduras	1976	1.7	7.6	0.7
Jamaica	1974	3.9	(c) 8.6	2.0
Nicaragua	1976	2.0	2.8	1.7
Panama	1976	3.7	7.5	2.5
Puerto Rico	1974	4.0	6.4	2.6
Trinidad and Tobago	1975	4.5	14.6	3.7
Venezuela	1976	2.9	(a) 5.7	(b) 2.4

(a) Capital city only. (b) Including one or more cities over 100,000 population. (c) Parish which includes capital city.

Source: Health Conditions in the Americas, 1973-1976. Washington, D.C.: Pan American Health Organization, 1978, p. 105.

Not only are urban areas more heavily endowed with health personnel and various types of services in comparison to rural areas, but within cities it seems that the geographic distribution of health services is further differentiated (Basta, 1977). The concentration of private physicians and services among populations with greatest economic resources is a widely recognized phenomenon wherever private medicine is practiced. Therefore, wealthy urban areas in Central and South American cities could be expected to have a greater proportion per capita of medical services than poorer neighborhoods. However, even in the public sector the pattern of inequality seems to prevail. In a recent study in Sao Paulo, Brazil, it

was found that from 1970 to 1978, despite a government policy designed to augment publicly funded health services for the needy, both the number and proportion of state-supported health centers increased at a higher rate in middle and upper income areas than in poor neighborhoods. Thus, already significant disparities in access to public services were actually widened, rather than narrowed, during this period of "reform" (Monteiro, 1979).

The health consequences of limited access to services are compounded by environmental and socioeconomic conditions. Inadequate sanitation, malnutrition, and infectious diseases among poor or socially marginal groups have already been dealt with in some detail. It should also be pointed out here that these groups are unlikely to receive health- or nutrition-related services which might be provided through other sectors or institutions in the society. Immunization or supplementary feeding programs provided through schools, and screening programs of health education provided in the job setting, will miss infants, non-enrolled school-age children, many women, and the unemployed.

Technology and Medical Specialization: An Imported Model

The maldistribution of health services n terms of geographic areas and population groups served is not only ethically unjustifiable. It also constitutes a gross misuse of resources, resulting from placing political considerations above the goal of maximization of health for the whole society. The political motivations behind such policies are reinforced by the particular model of medicine practiced in Latin America, and the values implicit within it. This model, adopted from the developed capitalist countries, is part of the transnational sociocultural value system referred to by Sunkel and Fuenzalida in their recent work (in press). It is further propagated by the commercial interests of the multinational medical supply industry (to be discussed below), and constitutes an important force behind Latin America's difficulties in solving its major health problems.

Some of the features of this medical model include a focus on hospital-based rather than ambulatory care, on curative rather than preventive services, on increasing specialization (particularly among physicians), and on the tendency to adopt sophisticated, complex and expensive treatment methods, when the most basic health needs of the region could be treated with simpler and cheaper techniques if economic and social resources were directed to this end. The values and practices that make up the existing system are reinforced at all levels, beginning with the training of health care providers, especially physicians. The German, French, Spanish, and North American models of medical curricula that have been adopted in most Latin American countries are concerned with a mechanistic view of the human body and disease (García, 1973). In addition, these models are designed for application in primarily urban, institutionalized settings, a feature whose appropriateness may be questioned even for developed countries, and which certainly does not respond to the health needs of the majority of Latin Americans (Rosenfield, 1977).

Another feature of this adopted medical model is its tendency to encourage physician specialization in those fields most popular in the developed world. As can be observed in Table 9, surgeons and gynecologists are proportionately over-represented in many Central and South American countries, and far outrank pediatricians and public health physicians in eight of eleven countries for which such data are available. These facts are especially striking when one recalls that, in many countries, the majority of births take place without medical assistance, that approximately half of the Latin American population is under fifteen years of age, and that the principal causes of morbidity and mortality are environment/space- and nutrition-related (Navarro, 1976).

These specialists practice for the most part, as we have seen, in the wealthier areas and the health care they provide is largely concentrated in hospitals and large clinics. This pattern is not conducive to either a broad or an equitable distribution of services, for the demographic and socioeconomic reasons outlined above, and in terms of distribution of health resources in general. In Brazil, for example, 70 percent of the human and financial resources for the treatment of tuberculosis are directed toward sanitariums and clinics, which treat only 10 percent of that nation's TB victims (Soares, 1977).

Within health care institutions, the medicine that is practiced is increasingly expensive and technologically complex. In many cases not only is this technology unresponsive to the health needs of the region in general, but it is actually inappropriate even within the context for which it was intended. Lack of trained personnel to run or monitor equipment, lack of money or knowledge necessary for parts and upkeep, and cultural factors that limit the patients' or staff' s utilization of the technology are some of the problems linked with the introduction of complicated technology into health care settings.

The ultimate problem with the medical system being described here, however, is that it requires an enormous investment of human and financial resources. These resources could, if applied to ambulatory, primary care and integrated social programs, serve to treat or prevent major categories of health problems. Illustrative of this is Navarro's calculation that with the annual operating expenditures of three open heart surgery units in use in Bogota, Colombia in the early 1970's, one quarter of the city's children could be provided with a half liter of milk daily for a year (Navarro, 1976). Navarro also compares the expenditures for curative health services with those for environmental sanitation in several countries (Colombia, pre-revolutionary Nicaragua, El Salvador, Peru, and Venezuela). He calculates that, at the beginning of the 1970's, only 4.4 to 8.8 percent of the total health budget in these countries was spent on water and sewerage, and notes the irrationality of this distribution given to prevalence of environmentally-related infectious diseases in Latin America (Navarro, 1976). The World Bank's 1975 Health Sector Policy Paper similarly criticizes the over-expenditure on high-cost, hospital-based curative services in developing countries, and the neglect of cheaper, more effective ambulatory services and environmental improvements for illness prevention.

TABLE 9

Distribution of Physicians by Specialty, by Area, Around 1976

	Total	General Practice	Surgery	Pediatrics	Gynecology & Obstetrics	Public Health	Other & not stated
Belize	41	29	4	1	1	2	4
Chile	4,414	3,967	---	393	---	---	54
Colombia	10,625	3,188	---	---	---	---	7,437
Costa Rica	1,293	486	242	128	104	6	327
Dominican Republic	2,374	1,619	43	107	94	35	476
Ecuador	3,109	1,115	473	385	416	45	675
Haiti	418	262	25	23	29	12	67
Honduras	954	527	48	66	50	41	222
Jamaica	271	144	32	11	15	26	43
Mexico	46,473	16,974	1,880	2,089	2,394	237	22,899
Nicaragua	1,357	875	44	103	63	15	257
Panama & Canal Zone	1,507	684	116	139	111	7	450
Paraguay	1,083	337	292	132	186	24	112
United STates	348,443	68,736	76,373	23,516	22,294	2,600	154,924

Source: Health Conditions in the Americas, 1973-1976, Scientific Publication No. 364. Washington, D.C.: Pan American Health Organization, p. 323.

Basic sanitation and a safe water supply are two components included in the World Health Organization's concept of primary health care. Other components are maternal and child care, immunization against the major infectious diseases, prevention and control of locally endemic diseases, and community education concerning the prevention and control of the most common diseases and injuries (Primary Health Care, 1978). Specific health conditions will vary from country to country, and within countries among different cultural and geographic areas. For primary health care to work, then, it must be organized locally around the particular conditions of the area.

The inequalities and unresponsiveness to local problems inherent in the standardized, technologically complex medicine practiced in tertiary care hospitals and in wealthier urban areas, has been recognized by several governments as obstacles to improved health. The Cuban government, in the past two decades, has totally reformed that country's health care delivery system, making primary community-level health care the central hub of this reorganization (Ministerio de Salud Publica, Cuba, 1976). The changes in the health profile of Cuba's population, marked by an extraordinary drop in infant mortality and morbidity from infectious diseases (Roemer, 1976), has been accomplished with minimal emphasis on expensive equipment for diagnosis and treatment, but with intensive environmental improvement and a restructuring of social and educational priorities to include community participation and equality in health care (Guttmacher and Danielson, 1977).

An enormous challenge is being faced by the government and people of Nicaragua after the triumph of the Sandinista Revolution in July 1979. Health conditions of the population at that time were among the worst in the Americas as shown by some selected indicators: infant mortality rates were estimated at 120 per 1,000 live births, and 67 percent of all children below 5 years of age were malnourished. In terms of resources, there were only 2.2 hospital beds per 1,000 inhabitants, and 5.2 physicians, 24 dentists, and 2.4 nurses per 10,000 inhabitants. Less than 6 percent of the rural population had access to safe water and more than 4 out of 5 had no system of sewage disposal. In urban areas the situation was somewhat better (Ministerio de Salud, República de Nicaragua, 1980-a).

Immediately after the new government took office, the National Health System (Sistema Nacional Unico de Salud) was created under the Ministry of Health. The new government's priorities were defined as follows:

1. To provide health services to the entire Nicaraguan population without distinction of social class.

2. To emphasize the development and implementation of preventive and environmental health programs, including immunization, waste disposal, and sanitation.

3. To integrate the people, through the existing mass organizations, in the planning, development and evaluation of the health programs (Ministry of Health, Republic of Nicaragua, 1980 a).

By mid-1980 several accomplishments could be listed:

1. The country was divided in 8 health regions, and each region in health areas with 20,000-30,000 inhabitants each. The Health Center -- one or more in each area -- is considered as the primary health care unit.

2. The health budget in 1980 had been increased to approximately 17 percent of the national budget.

3. Over 1,000,000 immunizations were performed between September 1979 and March 1980 as part of a national campaign.

4. Emphasis was placed on the ambulatory treatment of gastroenteritis and dehydration. Of 20,000 children treated in approximately 200 units, only 3.3 percent required hospitalization, and the death rate has decreased significantly.

Forty health centers, 160 health posts, and 6 hospitals were being built in 1980, and most of them are nearly completed. Five hundred maternal and child health auxiliaries were trained and admission to medical schools was expanded and curriculum was revised. However, the Ministry of Health has stated: "health improvement will only be possible if housing, environmental sanitation, education, and nutrition problems are solved at the same time" (Ministry of Health, Republic of Nicaragua, 1980 b).

Isolation and Fragmentation of the Health Sector

Other developing countries -- Panama, Costa Rica, and Barbados, for example -- are also making strides in the area of community-based primary health care. Multilateral organizations such as the Inter-American Development Bank (IDB) are recognizing the necessity for expanding health services to hitherto underserved and unserved areas and populations, as indicated in a roster of the IDB's most recent health programs (IDB News, July 1979). However, these projects are still confined solely to the health sector. Their descriptions include no mention of integration with other aspects of socioeconomic development and environmental improvement, or of any basic social changes necessary for the breaking of existing disease patterns.

Though of great importance to the individuals helped by reorganized health services on a local level, within the total context of Latin America these achievements are minor. In larger, more heterogeneous countries, national health systems and health problems continue to reflect the political and economic priorities of national development style and stratified social structures. The prevailing model in these countries, with its mystification of health technology, practitioners, and services, serves to further alienate health care from the people who should be benefitting. The conceptual and practical isolation of health and nutrition from changing land tenure patterns, agricultural development and food policy, and industrialization and urban planning, only magnifies the probability that negative health consequences will occur as a result of these activities.

Fundamental to any future coordination between health care and other development sectors is the relationship between different components of the health sector itself. In nearly all of the capitalist countries, health care is characterized by its diversified, multiple institutional structures. In Latin America, the structures which are present at the national level are, principally, (a) those supported by national health ministries, (b) those related to social security in one of its various forms, and (c) those which are privately organized. (In addition, there are locally important services which are organized at the community level, but we shall not include these in our present discussion, as their characteristics and impact vary widely and do not relate so highly to national development style.) This multiple health care system contributes to uneven quality of care and unequal coverage of the population, partly due to administrative factors but, more seriously, due to inequalities in resource distribution.

Within the public sector, the two major sources of health care are institutes of social security and the ministries of health. Although the proportion of the population covered by social security insurance is generally rather low compared to the proportion without such coverage, health expenditures in this sector are relatively high. This situation may be summarized as follows: In most of Latin America, under 20 percent of the population is protected by social security health services (see Figure No. 5). Nonetheless, the total public resources invested in these systems far exceed those invested in public health services provided by the ministries of health -- which are supposed to cover most of the remainder, or over three-quarters of the populations. Around 1970, for example, in Colombia, El Salvador, and Peru, the per capita health expenditures were three, six, and seven times higher, respectively, in the social security system than those spent by the Ministry of Health in each country. (Individual country data from Quadrennial Projections, 1971.)

Although it has been held that strong social security programs neither constitute rivals of public health programs nor preclude the expansion of services in the latter (Roemer and Maeda, 1976), two points should be kept in mind. First, social security systems cover only a small privileged sector of the working population (and their families, in some cases). Ministries of health are charged with providing health services for the largest sector of the society with the poorest personal resources, and possess significantly lower per capita public resources to do so. This system clearly discriminates against the majority of the population. Second, all resources are limited. Even though goverments that strongly support social security may also strongly support public health programs, coordination of the two systems would eliminate duplication of technology and services, reduce administrative costs, and maximize the health benefits to all (Roemer, 1973).

One country that has undertaken such a program of integration of services is Panama, which, since 1969, has been progressively turning over to the Ministry of Health the responsibility for planning and carrying out all preventive, curative and rehabilitative services for the entire country. This includes the centralized handling of human and monetary resources, the rationalization of health care utilization, and improved

FIGURE NO. 5

Percentage of the Population Covered by Social Security Systems, 1975.

(a) IMSS, 1972. (b) SERMENA

(c) Data refer to affiliated beneficiaries only.

Source: Health Conditions in the Americas, 1973-1976. Washington, D.C.: Pan American Health Organization, 1978, p. 98.

distribution of services among the capital, the provinces, and rural areas (Sandoval, 1974). These activities have resulted in important improvements in the overall health status of this country (Saied, 1976), as can be seen in the health indicators listed in Table 2 and in improved equity in services between urban and rural areas, as shown for 1969 through 1974 in Table 10.

Private Enterprise and Health

Unfortunately, however, rather than the integration of the social security and public health sectors, a common trend in many other Latin American countries has been the strengthening of private medicine. Under contractual agreements, the government, through social security, purchases ambulatory and institutional health services from the private sector. Critics of this system, in Brazil, for example, have held that it simply acts to magnify already serious inequalities in health service coverage by favoring salaried employees of large state-owned or multinational enterprises, and by diverting public resources away from primary preventive care toward a system already dedicated to practice expensive curative medicine for profit (Gittoni, 1977; Gentile De Mello, 1977; Gentile de Mello, 1978).

TABLE 10

Panama: Health Services and Environmental Health, 1969-74

	Professional Birth Attendance		% of Population w/ Potable Water		% of Population w/ Waste Disposal	
	Urban	Rural	Urban	Rural	Urban	Rural
1969	96.4	36.4	100	38.0	91.5	68.2
1970			100	41.0	93.0	68.3
1971			100	46.9	92.5	68.3
1972			100	49.8	94.4	67.8
1973			100	51.5	95.6	67.7
1974	97.9	47.6	100	53.2	97.3	71.2

Source: Abraham Saied, Memoria que presenta el Ministro de Salud.... Panama, October 1976.

Other government economic policies in the health sector are also resulting in decreased access to health care for the general population. In Argentina, for example, a country with a long history of progressive

health policies and excellent free services, the practice of charging for services in public hospitals is increasing (Bermann and Escudero, 1978). In Chile, since the overthrow of the popularly elected Allende government, the country's social security outpatient clinics have been sold to private investors, thus placing the burden of increased costs of medical care upon those forced to seek attention from the public sector (Report on Human Rights in Chile, 1976). In addition, private physicians have been permitted to increase their fees substantially and to decrease their participation in public health centers, and overall government funds committed to health care and the training of personnel have been drastically reduced (Navarro, 1974).

The expansion of private medical care can only worsen the health situation among those who are unable to pay for services. Nonetheless, this phenomenon is consistent with the capitalist development style under discussion in this work. We have pointed out throughout the paper cases in which the interests of private enterprise clash with the health needs of the majority of Latin Americans. Examples of this include agricultural development in relation to food policy and nutrition, industrialization, import and export policies in relation to occupational and environmental health, the promotion of inappropriate and expensive products, and the privatization of health care.

Within the formal health sector, unfortunately though not surprisingly, developing capitalist countries are extremely vulnerable to the pressures of companies which make their profits by ever expanding the market for health-related products. This vulnerability takes place on at least two fronts -- financial and sociocultural. In the first instance, private corporations (often multinational in ownership) offer health officials with ailing budgets the opportunity to equip health facilities in exchange for support or promotion of their products. Infant formula companies are champions at this technique, building hospital maternity wards and providing pre- and post-partum visiting nurse service as a way of advertising their brand of formula (Margulies, 1977). In the second instance, the sociocultural aspect of multinational influence in the health sector consists of the attachment of values in the "modern" or "Western" medical model to practices such as formula feeding.

Another industry that has an enormous economic and cultural influence over health and the style of medicine practiced in Latin America and other developing capitalist countries is the multinational pharmaceutical business. (Much of the information in this paper regarding multinational pharmaceutical companies comes from Silverman, 1976 and Ledogar, 1975.) Promotional tactics similar to those employed by infant formula manufacturers, including the publication and distribution of drug-related information and the introduction of sales representatives into the clinical setting, are regularly carried out by pharmaceutical companies. The importance of promotion to the pharmaceutical industry can be appreciated in the following illustration: Whereas in the United States, the ratio of visiting sales representatives to physicians is approximately one to ten, in Latin American countries the ratio is much higher -- one to eight in Ecuador, one to five in Colombia,

and one to three in Mexico, Guatemala and Brazil. In many Central and South American countries, pharmaceutical salesmen often earn larger salaries (including commissions) than most physicians (Silverman, 1976 and Ledogar, 1975). For many doctors, especially those not affiliated with large teaching or research institutions, these industry representatives and the propaganda they distribute are the major source of drug information that they receive after completing their formal training. And with the wide distribution of free samples, the companies seek to ensure that their brand name product will be the one remembered by practitioners when they prescribe for their patients.

Several other aspects of the pharmaceutical industry's place in developing Latin American countries bear emphasizing. Among these are: the relative lack of regulation over promotion and marketing and over the content of the products themselves; socioeconomic factors which influence the way in which the drugs will be used; and the place of drugs in primary health care.

Very few countries in the world, and certainly no Latin American countries, with the possible exception of Cuba, regulate the safety and efficacy of drugs as strictly as does the United States. However, developing countries, due to their technological dependence on the developed world, are particularly lax in this regard. Though controls and their enforcement vary from one country to another, a pattern of marketing of potentially unsafe drugs, or of acceptable drugs in unsafe dosages, exists throughout Latin America. Some of the substances that are most widely abused in this sense are among the most common therapeutic classes -- antibiotics, analgesics, etc. In addition, contraceptive preparations and devices have actually been field tested among Central and South American women without their knowledge of the risks involved (Mass, 1976).

The potential dangers from these drugs are intensified by lack of regulation in the retail marketplace and by the socioeconomic characteristics of the populations who purchase them. The ease with which an individual can buy ethical ("for sale by prescription only") drugs without a prescription in most of Latin America is well-known by most residents and travelers, and by the pharmaceutical companies who organize promotion and distribution around retail enterprises. This phenomenon is dangerous for a number of reasons. First, individuals who obtain drugs without a prescription have often either diagnosed themselves or have asked for the drug on the recommendation of a friend, neighbor or relative, rather than a trained health practitioner. Second, if they ask the pharmacy employee for assistance, they are not likely to get good advice on two accounts: the employee is apt not to be a trained pharmacist; and since the drug is being sold to make money, the vendor may prescribe an expensive brand-name compound when a generic or cheaper preparation would be equally effective, or may prescribe a larger quantity or dosage than is necessary. In addition, the pharmacist is subjected to the same barrage of propaganda and free samples as is the physician, and can be expected to pass on his industry-induced "preferences" to the patient.

For poor people, the consequences of such practices are most severe. The poor often turn first to a pharmacy for illness-related needs, either because of lack of access to a physician or primary health services, or because they are unable to afford both the doctor's fee and the drugs they know he or she will prescribe. Furthermore, they may not have sufficient money to purchase the amount of the drug (prescribed or otherwise recommended) necessary for effective treatment, a circumstance that can result in further illness. Insufficient quantities of antibiotics, for example, can lead to the development of sensitivity to the drug administered, and/or to super-infections. Poor people are additionally jeopardized by the practices and conditions described above because (as with pesticides and other chemical contaminants) their frequently more debilitated health and nutritional status make them more vulnerable to toxicity and other adverse drug reactions.

The pattern of drug production and distribution carried out by multinational corporations conforms in concept and in practice to the imported medical model described earlier in this section. As virtually all pharmaceutical research and development occurs in the developed countries, and as pharmaceutical preparations are sources of extraordinarily high profits for the multinational enterprises which produce them, it should not surprise us that these products are often neither economically nor medically suitable for developing countries. First, the amount of research conducted on so-called "tropical diseases" is small. In 1975, the World Health Organization estimated that the global research budget for that year for all tropical diseases amounted to around 30 U.S. million dollars, or less than 5 percent of the amount spent on cancer research alone (World Health Organization, 1975). Therefore, among the vast number of available drugs, relatively few address the most fundamental health problems of many Latin Americans. A great proportion of what companies call "research and development" actually consists of repackaging already known and marketed preparations in new dosages, in new combinations with other drugs, or with the addition of a vitamin. These practices contribute to the proliferation of "new" products in pharmaceutical stocks, and to intense competition within the industry, each company promoting its own brand-name version of what is essentially the same drug, and one that could be purchased generically for a fraction of the price.

Second, the research, promotion and marketing practices of multinational pharmaceutical companies -- supported by the developed countries' medical model which guides health personnel training and the pattern of health expenditures -- encourage individuals to feel that the solution to Latin America's health problems is chemical and can be purchased in the form of pills and injections. Much of the same intent and attitude lie behind the infant formula and the food fortification businesses. Medicines, artificial infant formula, and fortified foods surely have a place in the treatment of health and nutritional disorders. It must be remembered, however, that many of the problems they are meant to treat are actually symptoms of environmental and socioeconomic illnesses. While antibiotics, antiparasitic drugs, or fancy nutritional supplements might cure the immediate condition for which the patient is being attended, their long-term

effectiveness is nil, if the individual later returns to the environment in which the disease occurred.

It may seem inappropriate to spend so much space here on the pharmaceutical industry, given that drugs are just one small part of medical technology and health care. However, the amount of money spent in Latin American countries on pharmaceutical supplies is hardly small. Whereas in most industrialized countries, drug expenditure takes up from 10 to 15 percent of the national health budget, in developing countries this figure is between 20 and 50 percent (Yudkin, 1978 ; Agarwal, 1978). In 1974, in Brazil alone the amount spent on drugs was 900 million U.S. dollars, three quarters of which went to foreign-owned or multinational firms (Soares, 1977; Ledogar, 1975).

It has been estimated by various sources, including the United Nations Conference on Trade and Development (UNCTAD) and the World Health Organization (WHO), that the majority of the health problems of any nation can be met with only 200 to 300 of the more than 15,000 drugs currently available on the world market (Agarwal, 1979). Furthermore, health care institutions have shown that they can effect enormous savings by setting up their own small scale laboratories, and by producing basic drugs for their own needs, in a system reminiscent of pre-World War II days (Ledogar, 1975). National strategies to cut drug costs through the use of generic, bulk purchases, local manufacture and packaging, etc., have met, however, with powerful resistance and undermining tactics on the part of the large corporations. Because of the multinational pharmaceutical industry's power, plans for technology transfer, regional cooperation, and rational consumption, such as those proposed by WHO, UNCTAD, and the UN Industrial Development Organization (UNIDO), are actually being made in cooperation with the industry in developing capitalist countries. In Latin America, limited nationalization and pharmaceutical agreements among Andean pact countries have not been able to reverse the progressive concentration of manufacture and distribution in the hands of the multinationals.

This pattern of concentration occurs with the tacit consent, if not the encouragement and collaboration, of local governments and elites (Silverman, 1976; Ledogar, 1975; Alfaro Lara, et al, 1976). Patent regulations, import and export policies, tax laws, enforcement of regulations concerning product content and retail sales, and so forth, are intimately linked to the health consequences of the distribution and use of these products among the Latin American people (Katz, 1973; Lall, 1977; Lall, 1978). Therefore, any attempt to control or regulate this aspect of the health sector must be undertaken at various social and governmental levels. Unless this is done, market forces and the economic interests of the minority will continue to contribute to the overall misuse of economic resources and to the poor health of the majority.

IV. CONCLUDING REMARKS

In this monograph, we have discussed interrelationships between health and nutrition, environment and development style, and to analyze various aspects of the formal health sector which relate to these concerns. Although we have tried to cover what we perceive to be among the most significant themes in health care for Latin America, an enormous amount of material has remained untouched.

One of the remaining areas that should undoubtedly be addressed in future research and analysis is that of population control. Growing population is one phenomenon which proponents of capitalist development say is "holding back" progress. Though we recognize the strain that burgeoning populations place on societal resources, we believe the fundamental solution to be an equitable distribution of these resources. Certainly all families should have a choice about the number of children they bring into the world, and family planning methods and education should be available to those who desire them. But all families should also have a fair chance to raise healthy, well-nourished children who will be able to lead productive and satisfying lives. There is no current evidence to lead us to believe that if the lowest sectors of society -- the majority -- reduce their numbers or their birth rate, they will suddenly be eligible for sanitation, safe water, sufficient food, and their share of the financial resources which have, until now, been held by a minority.

Another area to which we have not referred, but which is of great importance, is that of the health and environmental factors associated with migration and the relocation of populations to formerly unsettled or less-settled regions. Resettlement usually takes place in conjunction with drastic ecological alterations, such as deforestation, re-channelling of local waters, road-building, and other forms of industrialization. In addition to the fact that relocated persons often have virtually no access to health services of any kind, they also have no immunity to local diseases. Furthermore, the altered ecological balance of newly settled areas can lead to epidemics or to the spread of hitherto isolated diseases. All of these phenomena have been observed as a result of government re-settlement programs in Brazil (Davis, 1977) and Paraguay (Conly, 1975), for example, and are constant sources of concern among health officials in countries with permanent migrant labor forces.

We have attempted to demonstrate not only the inseparability of health from environmental conditions and dynamics, but to demonstrate that the nature of this relationship is determined by broader political and economic policies. Thus, decisions that affect the health and nutritional status of much of Latin America's population are taken in response to other priorities and often run counter to what is required for improving general health. Furthermore, as we hope we have made clear, it is not sufficient to seek solutions to socially created health problems through a technology-oriented medical system. First, the major health problems facing Latin America can be solved without high cost technology. Second, just as human health and nutritional status are products of the entire social environment, inequalities

in health and health care are simply an aspect of inequalities in the overall organization of a society. As such, the goal of good health and adequate nutrition for all is inseparable from the goals of social justice and equality (Hakim and Solimano, 1976).

Equality is neither a feature nor a goal of capitalist development. So long as Latin American countries continue to pursue a model of economic development that features rapid industrialization, export expansion, and capital accumulation toward further participation in the capitalist world economy, their populations will be forced to make sacrifices for the benefits of national and international elites. From a health perspective, the consequences of these sacrifices are both devastating and long-term. The physiological, behavioral, and social consequences of communicable and parasitic diseases, malnutrition, infection, accidents, and poisoning from environmental contaminants, persist across the generations.

Several countries have recognized that health policy must be integrated on a conceptual and a practical level with general social and economic policy. They recognize that there is an inherent contradiction in capitalist development policies that sacrifice the wellbeing of individuals for the supposed good of the nation. Such phenomena as a growing gross national product, imported industrial technology, and the sociocultural accoutrements of "progress" and modernity are meaningless as indicators of national development if they benefit the few at the cost of the many. Nonetheless, the pressures to conform to a development model that emphasizes the generation of profits are enormous. It is likely that only through committed national policies and strong regional cooperation will Latin American countries be able to withstand such pressures and reverse a process that is exacerbating the hardships faced by their peoples.

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